AMIGA WORLD

June 1989
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KING OF ANIMATION!

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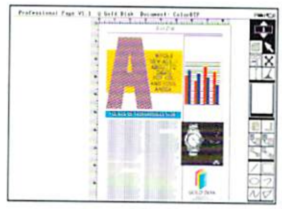
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For the Professional

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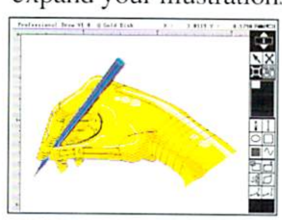
A wide variety of resizeable PostScript fonts. The ability to handle IFF bit-mapped graphics and structured graphics. Built-in text and graphics editing. Even the ability to output color separations for color publishing. Professional Page is US$395. 1 MB required.

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Why not let a pro do some of the work for you? Gold Disk's Professional Page Templates package gives you over 50 classic layouts for ads, newsletters and brochures prepared by a top New York designer. All the type specs are built right into the pre-defined boxes, so you can just flow your copy right in. And the documentation is more than just a manual - it's a crash course in graphic design. The Templates package is US$59.95.

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You need Gold Disk's Professional Draw, the first serious illustration program for the Amiga. It uses *structured* graphics, so curves don't have jagged edges when they're enlarged. Shrink or expand your illustrations, and they'll still look great. It has a user-



definable palette of millions of colors, supports PostScript, and works with the latest update of Professional Page. There's also an optional disk of pre-drawn structured clip art. Professional Draw is US$199.95. 1 MB required. Structured Clip Art is US$59.95.

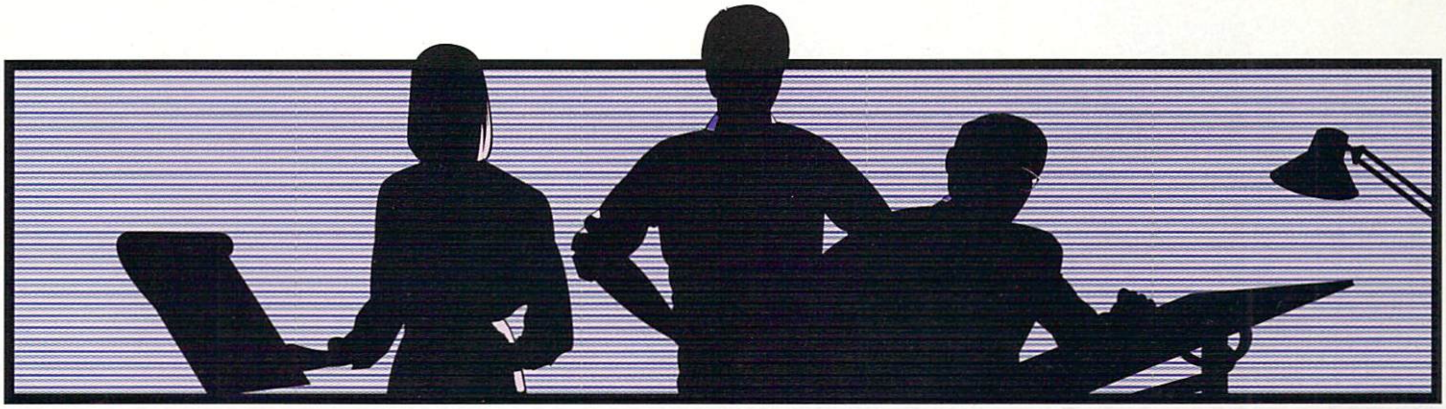
Is there a quick and painless way to digitize drawings and photos for use in desktop published documents?



There is now. Gold Disk has developed a hardware/software interface for the Canon IX12 black and white scanner. It saves IFF pictures at 300, 200, 150, and 75 DPI. Simply feed a page into the scanner and about 15 seconds later, the job is done. It's that easy. Scanner and interface US$1095.

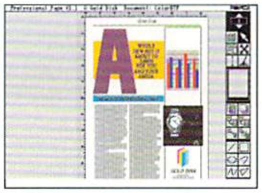
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Put Gold Disk's Professional Page, Professional Draw and ProScan IX12 scanner to work for you.

Gold Disk has the products to make the Amiga a serious tool for design and publishing. Compare *Professional Page* feature for feature with page layout programs on any computer. Its exceptional typographic control, flexible PostScript implementation, and color handling make it a clear winner. It outputs 4-color separations. Word processing functions and drawing tools are built in. Access hundreds of the highest-quality fonts. Import IFF bitmapped graphics and structured graphics.



Professional Page puts it all together.

But where do you *get* graphics that meet the standards of this kind of publishing? The jagged curves and diagonals that often accompany bitmapped graphics are unacceptable to the true professional. Structured drawing is the way to go, and nothing does it on the Amiga like *Professional Draw.* The smoothness and precision of the images you create with it are limited only by the printer's resolution. There's a powerful assortment of geometric and freehand drawing tools. Unlimited color. Enter type (fonts are included) and then stretch, twist, re-draw, or color it. Quickly magnify any area to check detail. Print or color separate your work on numerous printers, or bring it into *Professional Page.*



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We're not only bringing the Amiga into the real world, we're bringing the real world into the Amiga. Gold Disk's new hardware/software interface for the Canon IX12 B&W, 300dpi scanner makes it easier than ever to capture images for desktop publishing or illustration. Sketches, photos, logos – feed them into the scanner and in about 15 seconds you've got an image you can use with any Amiga program supporting the IFF standard. Use them in your *Professional Page* layouts, color them in a paint program, or import them into *Professional Draw* to be traced and made into structured graphics, as we did with the illustration above.

Are these tools strictly for the pro? Not at all. Gold Disk offers a package of easy-to-use templates for *Professional Page.* Designed by a top art director, these layouts have the type specs built in – just flow in your copy. And there's a disk of structured clip art for use in *Professional Page* or *Professional Draw.*

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This ad was produced and color separated using Professional Page and output as 4-color negatives on a 1270 dpi laser imagesetter. The illustration was created in Professional Draw, based on various photos that were scanned with the ProScan IX12.

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VOLUME 5, NUMBER 6 JUNE 1989

·C·O·N·T·E·N·T·S·

FEATURES

ARTICLES

COLUMNS

COVER ILLUSTRATION BY LARRY KEENAN
KING KONG Image
© 1933 RKO Radio Pictures, Inc.
Ren. 1960 RKO Radio Pictures,
a division of RKO General, Inc.
Photo courtesy of The Bettmann Archive



No, what you see above is not *a still from a movie that's been playing recently at your local theater. But it* is *part of an animation created on the Amiga—and a lot of those have been showing in recent competitions, shorts, and amateur productions all over the country. This month, we'll be casting a critical eye on animation packages for the Amiga. We'll also give you a hands-on tutorial on how to create animations based on an old-fashioned movie-making technique: stop-motion photography.*

DEPARTMENTS

REVIEWS

GAMES

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ZEITGEIST

How many is a million?

MAX TOY, President of Commodore, told JAUG (Jersey Amiga Users Group) at their March 17th meeting that Commodore will have shipped their one millionth Amiga by the time you read this. I have many varied reactions to that news.

1. Great! People are buying the Amiga. Lots of people are buying the Amiga! They have seen them, liked what they can do, and have decided that the Amiga is the best computer to own. Software and hardware solutions are out there. Third-party developers are profiting from their Amiga products, and now even more companies will be looking at developing for the Amiga.

2. Well. . .lots of people, including Commodore, think that one million is some sort of magic number, and that the moment the heavyweights (read: IBM business software and hardware developers) hear that one million figure, they will automatically start flooding the Amiga market with products. I think this is only half right. I think the heavyweights will act slowly. I don't think we will see a dozen new spreadsheets for the Amiga released in the next three months. I don't think that the one million number alone is going to convince companies. It might convince people who were on the fence before, and I'm sure that a number of the not-so-heavyweights will give the Amiga market a chance now.

If you take a step back and look at the products that are available for the Amiga now and then look at the "heavyweight" products for other machines, there aren't a lot of gaping holes. Yes, we could use some more serious business software, particularly business graphics and business presentation tools. And there is still room for more music, CAD, and educational software. Networking, mass-storage and flicker-free display hardware could be (and is now being) improved. But over all, the Amiga already has products that match or outshine the MS-DOS heavyweight equivalents.

You might also consider that some of those heavyweights got to be on top because they developed programs that let you do things with a PC that the Amiga does straight out of the box. Windowing software isn't a big deal for an Amiga. Integrated packages are great when you need to bounce around without closing one program to get to another, but with multitasking, we can already integrate almost any software from assorted companies. There are lots of DOS utilities out there to make things easier, but Amigas already have Workbench. (OK, it would be nice to have a Norton Utilities for the Amiga.) I don't think that too many graphics board people are going to be swarming over to the Amiga, and video hardware and software for other computers is far behind what we have right now.

It is always nice to see new companies and products joining the Amiga group, and I think the magic million will bring in some new players, but it will still take some time.

3. Relief. There have been times when the success of the Amiga was in question. The one million mark takes the Amiga out of the "lets see how they sell" category. But I think that Commodore's attitude in the past year, more than the number of units sold, has "legitimized" the Amiga. Commodore has shown a real effort to support the Amiga. While we sometimes feel that they aren't moving quickly enough or in the right direction, I think they have improved a hell of a lot.

4. Satisfaction. Now, when people ask "What is an Amiga?" or "How is the Amiga doing these days?," we have an answer that means something to just about everyone.

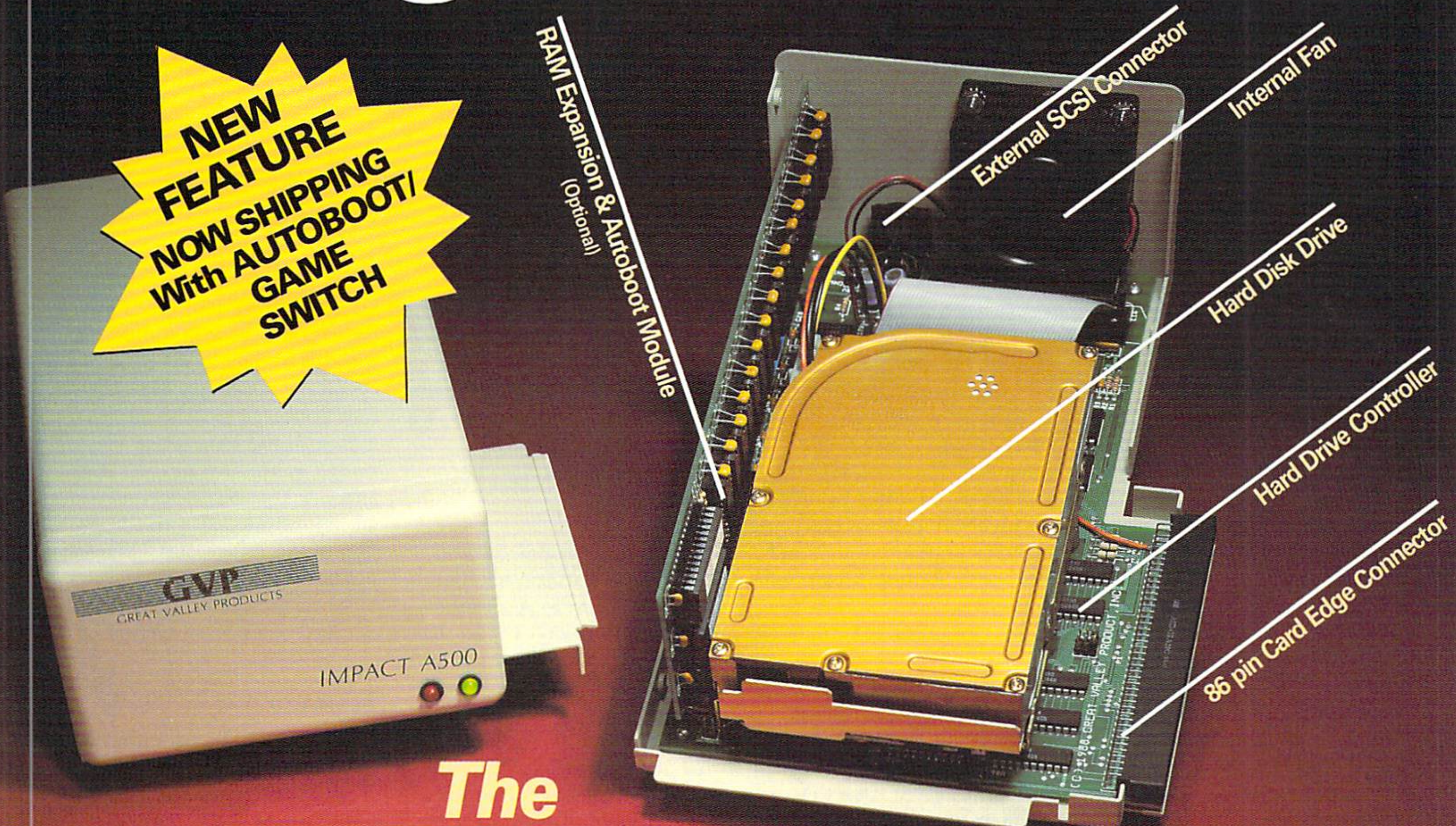
5. Regret. Like seeing your child grow up. Or a pioneer seeing a village turn into a city. It was fun going through the early days of the Amiga, bad and good. If you owned an Amiga, you were part of a small, elite group of free thinkers, not afraid to be the only person on your block or even in your city to own this special computer. To go out and sell this product yourself if no one else would. The group isn't so small anymore, but we are still elite.

6. So? What's the big deal? We always knew the Amiga was going to succeed. There was never any question in my mind. Of course they would sell a million Amigas! The Amiga is good enough to survive and thrive as long as they continue to make them. There was never a doubt about selling a million Amigas, only how long it would take. One million in three and a half years isn't bad (Apple said that they sold their one millionth Mac only last year), but I think the two million mark will be reached a lot faster.

7. Pride. I think we all helped the Amiga to succeed. All the developers, owners, magazines, public-domain collectors, user groups, artists, programmers, Commodore, engineers, show sponsors, and of course, the Amiga itself. One million is a nice milestone and there should be many others to come.



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REPARTEE

Comments, complaints, and concerns from AmigaWorld *readers.*

Bow to the East

I WAS VERY interested in the sad tale of woe by Miles A. Price ["The Five Days of Christmas," Repartee, April '89, p. 8]. As for the IBM PC and compatibles not being subject to the same type of sabotage, I too have both PCs and Macs where I work, on two separate local networks. Since the first of this year, both have been infected by viruses; one of them was a "time bomb" that waited for an extended period before becoming active. By that time, virtually every user on the net was infected, and many of them still may not realize it. So far, it is questionable whether we have cleaned it up. We have been reinfected on at least one occasion, but we have put a "vaccine" into the machines to correct it. No machine is immune, and if Mr. Price has not had a problem with his MS-DOS machines, he should bow to the East rather than condemn the Amiga!

William H. Hicks, Jr.
Melbourne, FL

She Loves 'Em Both

I ENJOYED THE item about Amigas being used at Ohio State University ["Science Quizzes," Notepad, April '89, p. 11]. I'd like to see more articles like that about serious uses for the Amiga.

I bought my A1000 for use as an artist's tool. I plan to purchase an A2500 and a Macintosh II, plus a laser printer for the Mac. I don't get involved in those petty arguments between Amiga and Mac users because I love both computers.

Vivian E.A. McAlexander
Sparks, NV

The Expandable 500

I RECENTLY SCANNED through your Hardware Buyer's Guide [March '89, p. 32]. I was pleasantly surprised by the amount of expansion devices available for the Amiga 500. The A2000 is generally considered to be the most expandable Amiga, and I tend to agree, but the A500 has more hardware options.

First, there is a lot of third-party hardware designed specifically for the 500. Secondly, with an expansion chassis from a company such as Pacific Peripherals or Phoenix Electronics, the A500 can use virtually all A2000 cards (excluding, of course, cards designed for the A2000's processor and video slots).

I'll be the first to admit that the 500 takes up a lot of desk space and that its power supply is limited. But, with a third-party power supply and ample desk space, the A500 can rival any high-end personal computer on the market, and at a bargain price as well.

Paul Hamm
Brooklyn, NY

Saturday Night Amiga

I HAD A moderately serious Amiga streak within me, but my enthusiasm took a nosedive recently when I read that the Toys-R-Us chain would soon be selling Amiga 500s. I do not hold this action, or the desire for profits, against anyone at Commodore.

However, I have tried to be a non-frivolous user of my own A500, and I have been stung by software that didn't live up to the promises of its own packaging. If (and when) the Amiga goes the way of Barbie dolls and G.I. Joes, I can only imagine that the explosion of software will overshadow any truly "serious" packages.

Magazines are already including game sections and game reviews. I've owned the Commodore 64 for years and had noticed many times how the quick-buck programming artists have flooded the software gates.

Someone once said that John Travolta single-handedly killed the disco and the country western recording markets with his overnight movie success some years ago. Has he now gotten hold of an Amiga 500? I would hate to see the Amiga go the way of the C-64 and the Atari ST. I, for one, am not impressed with the notion of the Amiga 500 "going public."

Mr. Grove
Chicago, IL

Errata

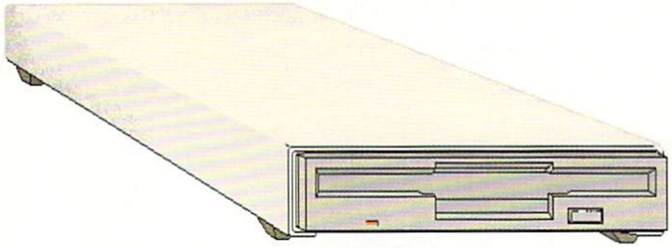
IN THE PRODUCT Information section of "How to Succeed in Business Presentations" (April '89, p. 28), the telephone number listed for Electronic Arts is incorrect. The correct number is 415/571-7171.

Also, in the same section (p. 30), the zip code given for Digital Creations' Rancho Cordova, CA office is incorrect. The correct zip code is 95742.

—Editors

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

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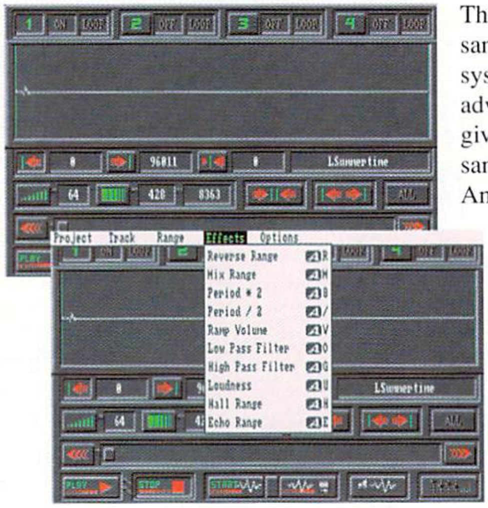
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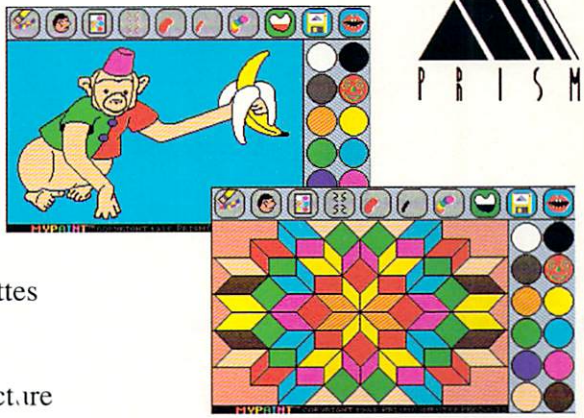
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NOTEPAD

Compiled by Linda Barrett

Show-Off Biz

BACK IN NEW York City for a return engagement in March, AmiExpo drew a record crowd—the largest yet for an Amiga show. The show's playbill, packed with details on lectures, seminars, and workshops, set the stage for excitement.

AmiExpo's cast of exhibitors included some new names in addition to many familiar ones. GRAFX Computing made its first show appearance demonstrating *X-Shell*, an interface to help you work more productively with Taurus' X-CAD. Another AmiExpo debutant, Micro Momentum, introduced *The Journeyman*, a portable Amiga, as well as some software utilities.

Video Toaster groupies stormed the NewTek booth to see the effects generator and *Digi-Paint III* in action, while ASDG and Gold Disk had the ears of desktop publishers. Their announcement of *ASDG-RESEP*, a utility capable of inserting 24-bit color images scanned by Professional ScanLab (ASDG's interface to Sharp scanners) into PostScript color separations generated in Gold Disk's Professional Page drew raves.

Among the others vying to steal the show were Mindware International's *PageSync*, which lets you create timed interaction between Amiga graphics and professional-quality audio, and Elan Design's *Elan Performer*, a multi-format presentation program.

Syndesis' latest starlet, *TSSnet*, is an Amiga software implementation of the Digital Network Architecture (DECnet). Syndesis also announced two new modules—Gold Disk's Professional Page and Impulse's Turbo Silver 3.0—in supporting roles for the company's InterChange and InterFont packages.

From the orchestra pit, Impulse sent out *Harmony*, a package that turns your script lines into music.

Brown-Wagh put many names in lights, among them *Project Master*, a professional project-management tool, and the *Easy Ledgers* integrated accounting system.

Manx Software Systems announced that *Aztec C Express*, the latest version of the company's software-development environment, is waiting in the wings.

Great Valley Products played a key part with the *Impact A2000-HardCardQ* combination Quantum ProDrive hard-disk/SCSI controller, and the 16 and 25MHz *Impact A2000-030* asynchronous-design 68030 coprocessor accelerators. Also starring in the GVP booth was the *Impact A2000-SQ44* hard drive with a 44MB removable cartridge Winchester hard disk. From Progressive Peripherals came news of *FrameGrabber 256*, a real-time 256 gray-scale digitizer.

Long before the curtain came down, the Amiga—this show's leading lady—got standing ovations from attendees, manufacturers, and retailers alike. The next stop on the AmiExpo tour will be Chicago for a July 28–30 engagement. For more information, call 800/32-AMIGA. —*BGT*

All Together Now . . .

IN ADDITION TO being the world's largest technology exposition, the CeBIT show in Hannover, West Germany is a showcase for Commodore Germany's latest brainstorms. Having been criticized in the past for launching a multitude of disparate hardware products, Commodore focused on integrated solution packages for the Amiga at last March's show.

One display, aimed at the desktop-video market, combined an Amiga 500 with the new A590 Hard Drive Plus (20MB storage, DMA controller, SCSI interface, and sockets for up to two megabytes of RAM expansion) and the VideoBox, which includes a Diamond Scan digitizer, RGB splitter, and genlock. Four software packages drive the system: the Diamond paint program for digitizing and image processing, Quick Silver for 3D design and animation, Effects for special video effects, and Video-Titler for on-screen text.

Desktop publishers were drawn to the A2000 display. The desktop-publishing system featured a three-meg A2000 with a 40MB hard disk, a hi-res AOC color monitor (connected by a non-interlaced color adapter and the ASDG-IEEE interface card), a Sharp JX 300 color scanner, and an NEC LC 890 PostScript laser printer. For software the system offers Professional Page, Professional Draw (both from Gold Disk), and Professional ScanLab (ASDG).

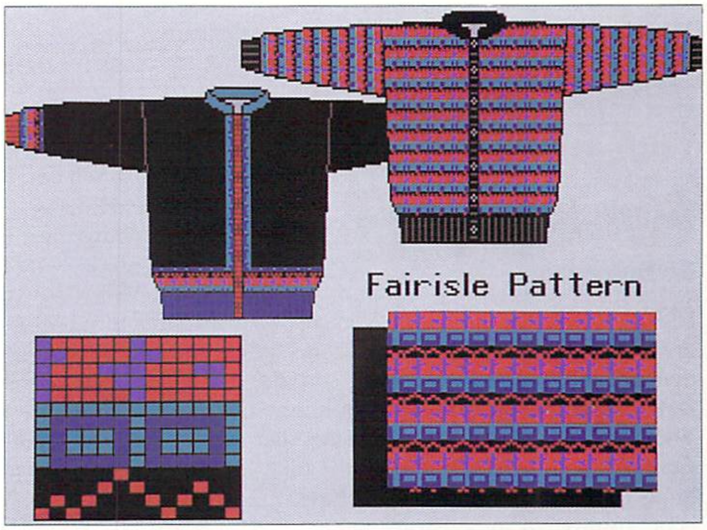
Activity was also heavy on the business front. The Amiga 2500 UX drew crowds of UNIX enthusiasts,

while IBM PC/AT lovers examined the A2286D AT Bridgeboard and enhanced Janus libraries for the A2000. To brighten up your printed documents, the company debuted the MPS 1224 C, a 24-pin color printer promising speeds up to 220 characters per second (cps) in draft mode and 72 cps in near-letter-quality mode.

For German Amiga owners Commodore was showing off their Btx Software Decoder that allows people to access the Bildschirmtext, the interactive videotext service of the German Federal Post authority.

Commodore must forsee a profitable future for its new Amiga products. If show gossip was correct, the company will double the size of its booth next year. *—GW*

The Stitch Niche



Susan Lazear's Fairisle sweater pattern a la Amiga.

IF THE WORDS knitting, weaving, and needlepoint bring to mind little blue-haired grannies, then you're way behind the times. During the first meeting of the Textile Computer Users Group at Computer Showcase in San Francisco last March, a savvy professional group expertly threaded their textile jargon with computerese.

Margaret Copeland, a textile designer and production weaver, chaired the meeting. A former business programmer, she wrote Chromaweaver, a color-weave design program for the Amiga, and hopes to eventually add full-spectrum 3D-shaded thread images that accurately coordinate to commercial dyes. Her ambitious plans include creating a disk library of weave patterns, and developing a "pick-out" scanning system to analyze the structure of fabric previously woven.

Margaret initiated the gathering with another Amiga user, Susan Lazear, out of the shared desire to encourage wider use of computers in the textile arts. Susan is the founder of Cochenille Computer Knit Products Inc. of Orinda, CA, developers of the first Amiga/IBM interface for the Brother 930/Knitking automated knitting machine. She is also a textile and knitware designer for leading California sportswear manufacturers and a virtuoso on the Amiga with DeluxePaint II (Electronic Arts).

Susan mesmerized the gathering, which included several Master Weavers visiting from Germany. Taking a colorful sample design from Margaret's Chomaweaver program into DeluxePaint II, she rescaled it as a fill, and with the stencil function, laid it into a sweater body she designed on the spot. Susan prepares all her specification sheets and graphic samples for clients on the Amiga, printing them in luscious color with a Xerox 4020 ink-jet printer.

Demonstrations of Digi-View (NewTek) and various color printers sparked excited discussion of specialized applications. There were reports of surface designers adhering silk to a paper backing and running unhemmed scarves directly through their printers, and experiments with food dyes in ink-jet printers.

Handwork also benefits from Amiga technology. Across the Golden Gate, Kathleen Rake creates and teaches needlepoint and needlework design at the College of Marin. All her lessons are prepared completely on the Amiga. Stitch patterns are diagramed with instructional text and printed using PageSetter (Gold Disk), Scribble (Micro-Systems Software), and DeluxePaint II.

The volatile fashion business demands innovative garment and textile design, while the mushrooming hobbyist market is hungry for novelty. The Amiga offers powerful and affordable design tools with possibilities for interfacing to computer-automated looms, knitters, and sewing machines. Users are asking for adaptable or modular programs built with an understanding of their craft. A paint program with a few technical tucks and ruffles would send some eagerly back to their knitting. *—Sue Albert*

Wanted: Fine Art

THE ABACI GALLERY of Computer Art, in association with Machlan Enterprises, is compiling a book of Amiga computer artwork. Artists interested in submitting their work should send duplicate slides (no originals); each slide should include a title, artist's name, and copyright. All artwork should be original, preferably hand-drawn, designed and created using the Amiga by the artist(s) submitting the work. Deadline for submissions is June 30, 1989. Send your submissions to ABACI Gallery of Computer Art, 312 NW 10th, Portland, OR 97209 (Attn.: Daria Barclay). For more information, contact Daria at 503/228-8642 or Richard Machlan at 503/639-4631. ***—SL***

REVIEWS

Viking 1

See your big ideas life size.

By Bob Ryan

MUCH OF WHAT makes the Amiga great is contained in the custom chips that control graphics, animation, sound, DMA (Direct Memory Access), and more. These custom chips and the libraries that support them, however, also define the limits of the Amiga system. This has been a source of some frustration as newer computers have leapfrogged the Amiga in terms of display resolution. The Viking 1 monitor from Moniterm is an ingenious solution to the problem of expanding the Amiga's resolution. Before you rush out and remortgage the house, though, you may want to wait for Commodore's Enhanced Chip Set to be released.

Viking 1 is Moniterm's implementation of the Commodore A2024 monitor. Like the yet-unreleased A2024, the Viking 1 is based upon the hardware design of Hedley Davis and the software engineering of Dale Luck, the author of the Amiga graphics library. It can display standard Workbench applications at a resolution of 1008 horizontal pixels by 800 vertical pixels in four shades of gray. Unlike the A2024, however, which attaches to the Amiga RGB port and contains the circuitry needed to create the enhanced display, the 19-inch Viking 1 is an Amiga 2000-only product. It comes with an interface board that creates the display, and enough memory to buffer the display before it is output to the monitor. Until AmigaDOS 1.4 ships, the Viking 1 will also come with a special Jumpstart disk.

Installing the Viking 1 hardware is easy and takes no longer than ten minutes. Remove the cover from your Amiga 2000 and nudge the interface board into the video slot at the right-rear of the machine. Then close up your machine, place the monitor on top of your Amiga, and connect the monitor to the interface card using the supplied cable.

Leapin' Libraries

To operate the Viking 1 your machine must have the Exec, graphics, and Intuition libraries from Kickstart 1.4. Because Kickstart 1.4 is not yet available as a replacement ROM chip, it comes to Viking 1 owners on disk. This disk contains the Jumpstart program, which loads the 1.4 libraries into RAM and then patches your system software so that your Amiga uses these libraries instead of the ones in ROM. Then, the Jumpstart program reboots your system using the 1.4 libraries.

Once you have rebooted with the 1.4 libraries, run the SetMonitor program to indicate that you will be using the Viking 1. Now, you can activate the enhanced resolution mode by running Preferences and selecting an appropriate mode switch, and then loading the ResetWB program, which puts you into 1008 × 800 display mode.

Although the software installation is uncommon, the entire process, with the exception of ResetWB, can be done automatically using script files supplied on the Jumpstart disk.

Applied Ingenuity

Although it can be extended a bit with software overscanning, the Amiga's high-resolution limitation of 640 × 400 is fundamental to the Amiga's design. To increase resolution by normal methods, you would have to put an entirely new display system on an expansion board and write new libraries to support it. If you did that, however, the new display hardware would likely be incompatible with current software.

The Viking 1 avoids such problems by creating its large display from multiple standard Amiga displays. The software sets up four or six (depending upon the option you choose from Preferences) linked Amiga displays in chip memory, and sends each to the Viking interface 10 or 15 times per second (depending on the display mode you select). The interface board assembles these frames in its buffer and then outputs the result to the monitor.

Both of the Viking 1's extended display modes—10 Hz and 15 Hz—produce a 1008 × 800 display. The difference is that the 10 Hz display is jerkier while the 15 Hz mode uses Chip RAM DMA and can cause bus contention (i.e., as the custom chips access chip memory to create the display, they steal cycles from the 68000, thereby slowing program processing). Although the display does not scroll as smoothly in either mode as does a standard Amiga screen, I consider this a small price to pay for the huge, crisp, steady display that the Viking 1 provides. I've often gone home with sore, burning eyes after working with a standard Amiga monitor for six or eight hours. I encountered no such problems with the Viking monitor.

In addition to the extended modes,

the Viking supports standard Amiga low-, medium-, interlaced-, and high-resolution modes. As a bonus, it removes flicker from interlaced and hi-res displays as effectively as MicroWay's flickerFixer.

Watch Your Twos and Fours

The Viking 1 converts all displays into four shades of gray, and because it supports just one sprite—the pointer sprite—it is not suitable for arcade games. Still, the Viking 1 will run any software in extended mode that uses a two- or four-color Workbench screen and follows Commodore's programming guidelines.

Because the monitor is designed with a few specific applications in mind, I tested a number of leading word-processing, CAD, and desktop-publishing programs with the monitor and came up with mixed results. Although the current level of support is good, I believe that the release of AmigaDOS 1.4 will spur more developers to insure that, if appropriate, their software supports the extended mode.

Software that does not employ a standard Workbench screen cannot access the Viking 1's extended modes. That eliminates programs that use custom screens. ProWrite (New Horizons), for instance, uses an eight-color proprietary display. While excellence! (Micro-Systems Software) also normally opens a custom



The Viking I lets you see an entire full-size $8\frac{1}{2} \times 11$ sheet on screen.

screen, you can force it into Workbench by using the CLI's -w option. (Entering your program disks's name followed by -w on the command line prompts any program supporting this option to open into the Workbench screen.) When run this way, excellence! performed beautifully in extended mode.

Not so WordPerfect (WordPerfect Corp.). Using the -s option from the command line I was able to open a larger-than-normal window on the extended screen, but this window did not occupy the whole display. I also encountered problems operating the program in extended mode.

Because most CAD programs use custom screens, not many can take advantage of the Viking 1. One that does, Aegis Draw 2000, lets you choose to open into Workbench.

The test I was most interested in involved running Professional Page (Gold Disk) and PageStream (Soft Logik), the two Amiga desktop-publishing heavyweights. Although Pro Page normally uses a custom screen, it does support the -w option. When I ran the program using this option, however, a requester informed me that I had insufficient Chip RAM. I didn't have a prototype of the new Fatter Agnus chip that provides one meg of Chip RAM, so I tried running the program with a two-color Workbench, rather than in four-color mode (an option made possible by Jumpstart's Preferences). Pro Page worked fine on the two-color Workbench, although it was unable to display inactive boxes, the grid, column outlines, and other things that use the upper two colors of the usual four-color Workbench. The fact that I can get an entire $8\frac{1}{2} \times 11$ page on screen at 100% magnification will make up for the invisible lines until I get a Fatter Agnus chip.

PageStream was another story. Once ►

again, I used the -w option to open the program onto a Workbench screen. I was encouraged by the fact that PageStream loaded, opened its tools window in the upper left of the extended screen, and laid its menu across the top. When I tried to create a document, however, the program crashed. I never got PageStream to work in extended mode.

PLAYING CATCH-UP

The Viking 1 is just a little ahead of its time. Until the Enhanced Chip Set and AmigaDOS 1.4 hit the market, the monitor will be harder to use and will work with less software than it should. If you think a beautiful 19-inch four-gray-level display is just what you need for your desktop-publishing, word-processing, or CAD application, put $1995 into the bank until Commodore releases the new chips and operating system. Then, use the original $1995 to buy the Viking 1 and the accumulated interest to buy the the Enhanced Chip Set and 1.4. You will not be disappointed.

Viking 1
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No special requirements.

4004 GENLOCKABLE VIDEO GRAPHICS ENCODER

The bucks top here.

By Joel Tessler

FROM THE MOMENT it was introduced, the Amiga has been touted as a serious video-graphics tool. Despite its outstanding abilities, however, the A1000's composite video signal is inferior. Commodore responded to criticism of the A1000's built-in encoder by doing away with it on the A500 and A2000, in hopes that third-party manufacturers could do a better job. Magni Systems, a company known to video insiders for its fine test equipment, has met this challenge—but at a price that excludes all but professional users.

EXPERTO CREDE

With the 4004 Genlockable Video Graphics Encoder for the Amiga 2000, Magni Systems demonstrates its knowledge of NTSC intricacies. (Model 4005 is the PAL version.) The 4004 consists of two cards: a 100-pin genlock-and-encoder board that fits into an IBM slot, and a video-interface board that plugs into the Amiga's video slot. Two flat cables link the genlock/encoder board with the video interface. A nine-pin breakout cable, which extends from the rear of the encoder board, lets you attach an external video reference in, external key in, reference black out, and video out. Using the video interface's eight DIP switches, you can configure the 4004 to one of four genlock modes: sync and burst lock, burst lock only, sync lock only, and internal reference.

The 4004 is shipped with two disks: a self-running demo and the Magni 4000 ►

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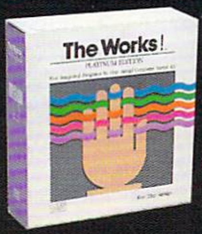
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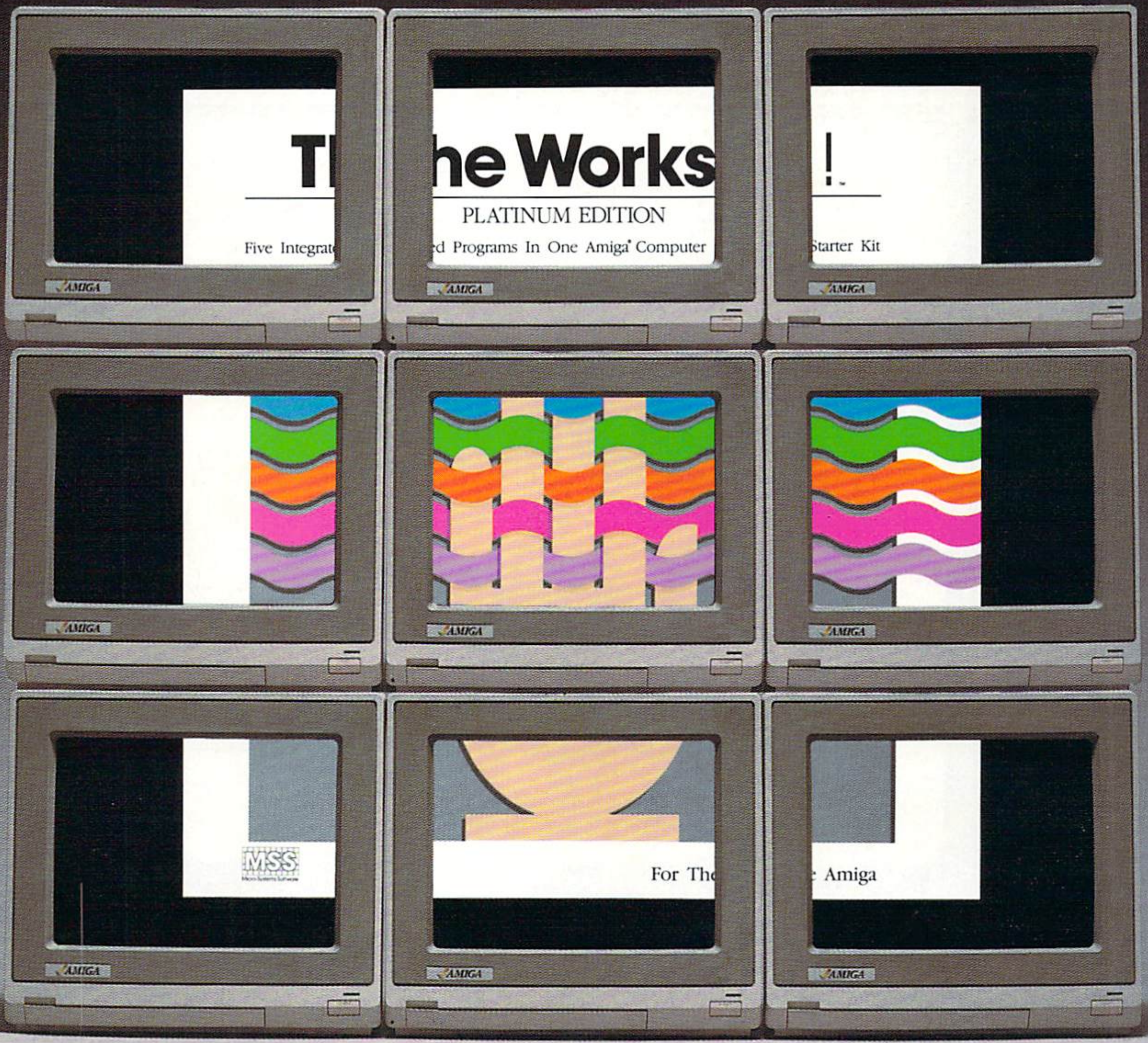
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Series Control Software, which allows full mouse or keyboard control of the genlock. The demo runs flawlessly, but attempting to use the control software right out of the box is frustrating. Clicking on the program's icon yields no response. Only loading from the CLI offers a clue—the error message "Cannot establish communication with video hardware."

Upon close inspection of the manual, I discovered that the factory configuration of the DIP switches is sync and burst lock. For the software to be enabled, you must reset three of the switches to a fifth mode. Once I set the switches properly, the software ran fine as both a foreground and background task. I had no trouble using the program with various combinations of graphics packages. The control software allows you to reset the genlock mode, turn keying on or off, invert keying, choose between color 0 or luminance keying, adjust the key level, mix between video and graphics, cut between video and graphics, or set auto rates for these transitions. If you want to maintain this type of control over the genlock while using single-tasking programs (like JDK Images' Pro Video Plus or Video Effects 3D by InnoVision Technology), you must spring for the optional 4010 remote-control unit. (The 4010—an extra $300 with the genlock or $495 purchased separately—is similar in design to other genlock controllers. It hooks up to the back of the video interface via a 25-pin connector.)

Running the control software panel in the foreground, you can enable all functions via the mouse. When you use the genlock "live," however, this setup is not necessarily desirable. For this type of application, you can transfer keyboard control to your graphics program by placing the Magni software in the background. At any time, you can override the dominant graphics software with the 4000-series program by pressing a key combination; then, the function keys trigger the various genlock modes. You can return authority to your graphics program at any time with another simple key combination.

Squeaky Clean

The Magni system delivers the cleanest video signal I have yet seen from the Amiga. Using the 4004 in its factory-configured setting will give you graphics-only output in broadcast bandwidth while independently locking to external sync and burst. In the absence of an external reference, the sync oscillator will lock to its own internal timing. Therefore, you need only connect the video output cable to a properly terminated destination to obtain proper NTSC graphics. The auxiliary output can also be configured to provide blackburst out.

Using the public-domain program VTOT (Video Tools on Tap), I displayed SMPTE bars, full-field color bars, and a gray scale through the 4004, and measured the output on both a waveform monitor and a vectorscope. Several video engineers agreed that the signal easily conforms to broadcast tolerances. To the less trained eye, the stability of the graphics is obvious evidence that the 4004's signal is high quality. Dot crawl is almost non-existent and the NTSC colors closely approach the RGB originals.

Continued on p. 72

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BASIC by the Numbers

In his last hurrah, our intrepid BASIC seer actually tries to do something useful.

By Bob Ryan

75 The Mod Squad

IN THE LAST three installments of "BASIC by the Numbers," I've discussed how to perform different types of text-data manipulation—specifically, how to access data files and how to sort and search data. This month, in the final appearance of this column, I put these pieces together with information from previous columns to create a nice address-book application. The whole program is printed here as Listing 1.

The Address Book program consists of a short main routine and lots of subroutines. This illustrates the concept of modular programming: break large programs into small pieces, then string them together to form finished applications. Look at the main routine of Address Book. It consists of 11 lines that initialize the array, set up the menus, turn on menu and error trapping, and then wait for you to make choices from the menus.

76 In the Driver's Seat

THE WORK OF the program is done in dedicated subroutines accessed by menus. The menus themselves are handled in four separate routines. CheckMenu tests for the menu item selected and calls the proper routine to handle that choice. For example, if you choose List from the Print menu, CheckMenu calls the PrintRec routine that actually sends the contents of the address book to your printer.

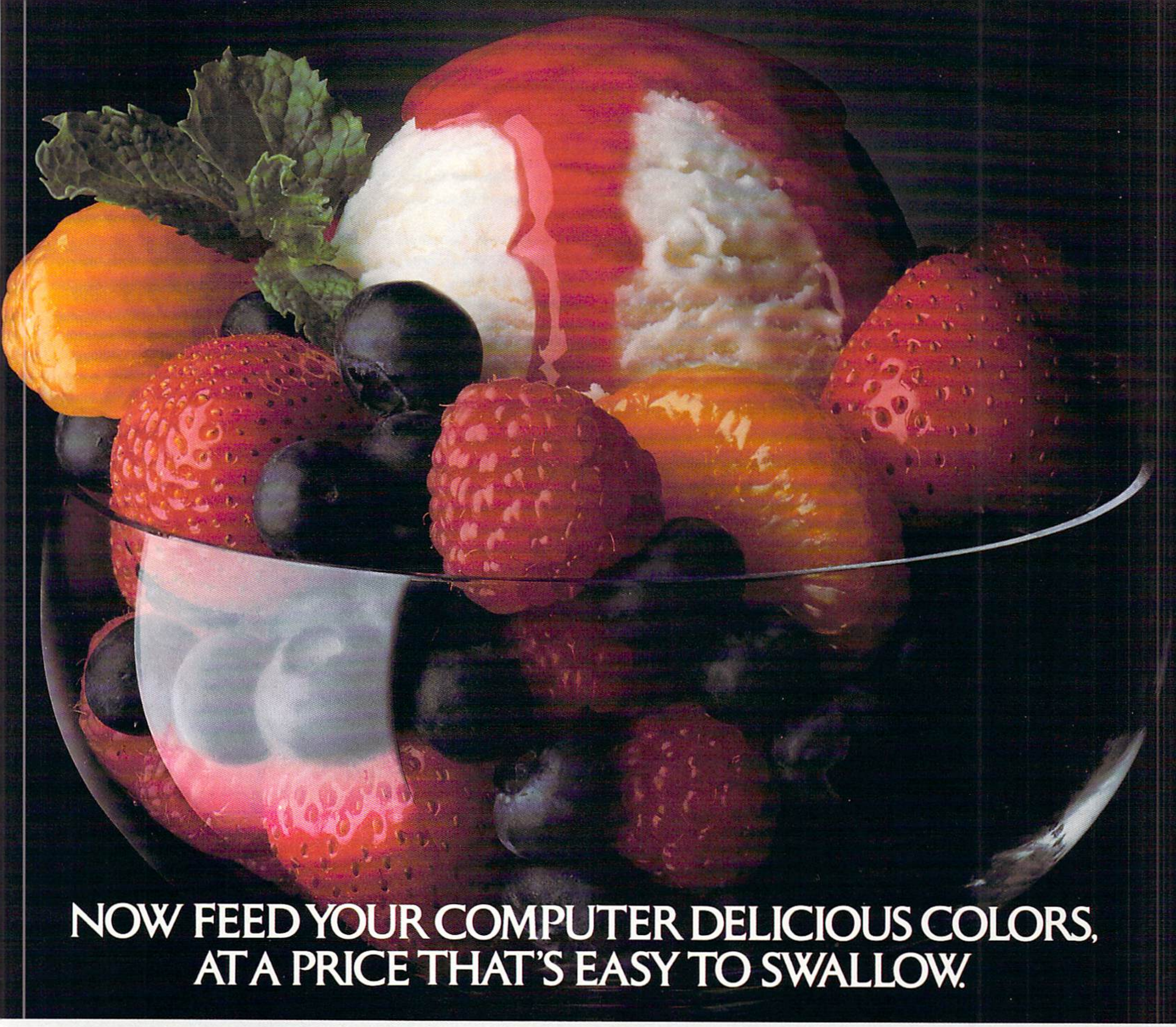
The three other menu-handling routines, ActivProject, ActivAll, and ActivNone, make some menu items active or inactive, depending upon whether a data file has been opened or whether another routine, such as the search routine or the show forms routine, is running. ActivProject activates the Project menu only and is called when you first start the program. ActivAll is called after a file has been opened, giving you access to all the menu items. ActivNone shuts down all the menus while the program is printing or waiting for keyboard input. These three routines insure that you cannot perform an action at an inappropriate time.

The use of multiple windows goes hand in hand with the use of menus. Every input and output action the program performs uses a dedicated window. This keeps the output display clean and uncluttered.

77 Changes

IF YOU HAVE followed my previous discussions on file handling, sorting, and searching, you will notice that I have pretty much used the same code; I have simply repackaged it into subroutines accessed by menus. For example, the file-opening routine (OpenF) now opens a small input window and asks you for the name of a file. It then reads in the data, sorts it with a call to FSort, and activates all the menus before returning program control to the menu-trapping loop in the main routine. The sort routine itself is identical to the routine used in earlier installments.

The search routine RecSearch has undergone the greatest transformation. The problem with the old routine is that it did not check to see whether there were multiple "hits"—whether more than one data item matched the search parameter. The CheckRec portion contains the logic to check for more than one match. It uses a recursive algorithm to check records adjacent to the matching record until all matches are found. ►



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78 Information Displays

THE PROGRAM LETS you display data in two ways: as forms and as a list. The forms mode displays the information from one record and then waits for you to hit the Return key. The list mode displays ten records at once. Note that the ShowForm routine is called by the search routine as well as by the Display Form menu item.

A new addition to the program is the ability to print records in a list or as mailing labels. The printer is treated like any other file; it must be opened and output is directed to it by using its file number. The labels routine prints three lines of information and three blank lines. This assumes you are using standard one-inch mailing labels and setting your printer to six lines per inch.

79 The Next Step

ADDRESS BOOK IS a nice little program, but space limitations made it impossible for me to incorporate all the bells and whistles I wanted. Making a virtue out of a necessity (or a feature out of a bug), I'll leave it to you to incorporate some or all of the following improvements:

The program needs an Edit menu that will allow you to edit the information in the records and to delete entire records. The Record Add routine should also be a part of this menu.

The search routine should let you choose what field you want to search. It should also let you indicate a range such as "last names between F and H." You should also be able to choose a range of records for printing.

One final improvement the program needs is a file requester. This one is rather complicated and you may not want to undertake it. Luckily, *AmigaWorld* has an article on an Amiga Basic file requester in the works.

80 Out, Out, Brief Candle!

THAT'S IT FOR "BASIC by the Numbers." Before the editors get out the wooden stake, I'd like to say that I've enjoyed writing the column; I hope you've enjoyed reading it.

Listing 1. Address Book program.

```
REM Address Book Program
REM By Bob Ryan
REM May, 1989 AmigaWorld

        REM Main Routine
DIM lst$(100,7)
GOSUB ActivProject
ON MENU GOSUB CheckMenu
MENU ON
ON ERROR GOTO eHandle

s=1
WHILE s=1
   SLEEP
WEND

END

        REM Menu Handling
CheckMenu:
   MENU OFF
   ON MENU(0) GOSUB m1,m2,m3,m4
   RETURN

 m1:
   ON MENU(1) GOSUB NewF, OpenF, Quit
   MENU ON
   RETURN

m2:
   ON MENU(1) GOSUB ShowList, CheckForm
   MENU ON
   RETURN

m3:
   ON MENU(1) GOSUB AddRec, GetSearch
   MENU ON
   RETURN

m4:
   ON MENU(1) GOSUB PrintRec, PrintLab
   MENU ON
   RETURN

        REM Exit Routine
Quit:
   MENU RESET
   STOP

        REM Get Data for Search
GetSearch:
   GOSUB ActivNone
   WINDOW 2,"Search",(50,50)-(400,150)
   LOCATE 5,3
   PRINT "Get Search Parameter"
   PRINT
   INPUT "Enter Last Name: "; search$
   WINDOW CLOSE 2
```

Listing continued on p. 108

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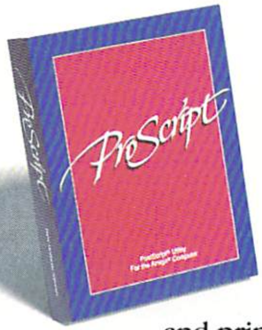
Word is out. ProWrite 2.0 allows you to expand your Amiga word processing to new horizons. Use it to generate proposals with impressive bar charts. Create letters and reports with snappy graphics. Generate television storyboards. Even dash out newsletters with spot illustrations.



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All this, plus ProWrite's powerful editing capabilities and ease-of-use combine to make ProWrite the best word processor for the Amiga computer.

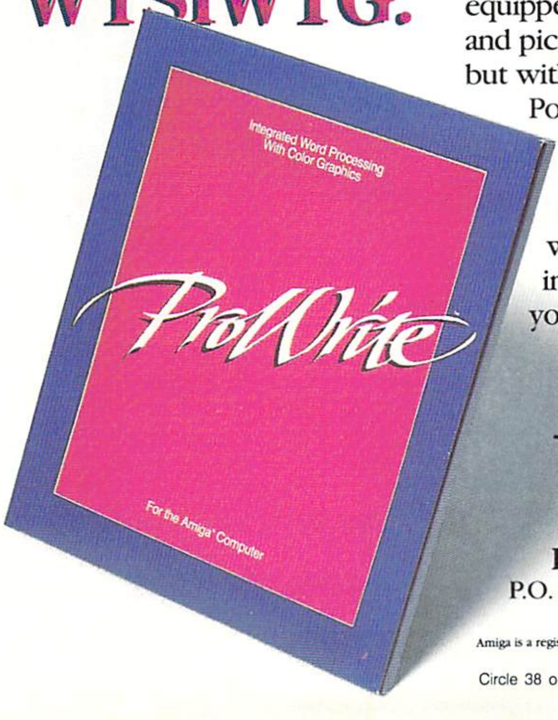


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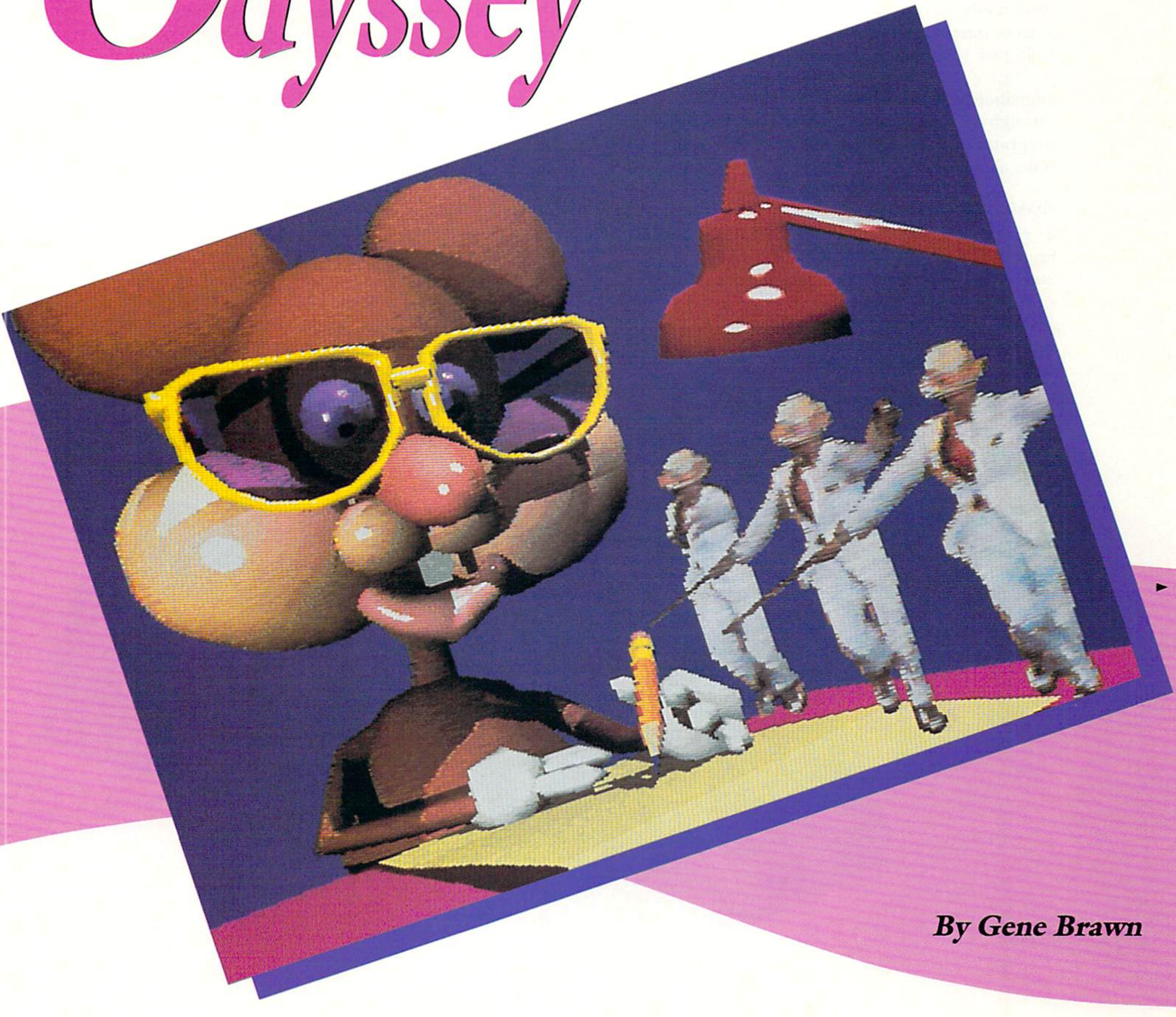
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Animation Odyssey

It took Odysseus 20 years to find his way home, but "Homer" Brawn will guide you through the perilous maze of Amiga animation programs in considerably less than epic time.



By Gene Brawn

ILLUSTRATED BY BRUCE GRANOFSKY AND RICK ROCK

VENTURING THROUGH THE realm of Amiga animation was not easy. Flipping through my bitmaps, I was surprised to see that all of the roads ran in different directions. The Anim Expressway was obviously built for speed, but strangely, it was nearly empty of traffic. Antic Alley intrigued me with all its twists and turns, but it was far too narrow. The Hash route looked promising, but the directions were so vague that I never did find it. I did find the 3-D Zone, an amusement park, crowded with attractions. There the Turbo Ray Tracer had the longest lines, but the ride took so long to complete that I got tired of waiting.

What I found most frustrating of all on my animation odyssey was that there weren't any intersections or interchanges to connect the different routes. I did pick up in my travels, however, a great deal of practical experience. So to help you find the finished animation you are searching for, let me guide you through the bewildering domain of Amiga animation programs by pointing out the tourist attractions and traps along the way.

Road Signs

To make it into the animation guidebook, a program must meet several criteria. It must multitask politely and never hog the machine's resources. It should work in all graphics modes and support all of the IFF (Interchange File Format) graphics standards, including Anims. The user interface should be an efficient blend of icons, menus, and keyboard equivalents, while the manual should be well written and completely indexed. Finally, the program code should be small and efficient, allowing full use of system memory and resources. Unless noted all the programs require a minimum of 512K to run.

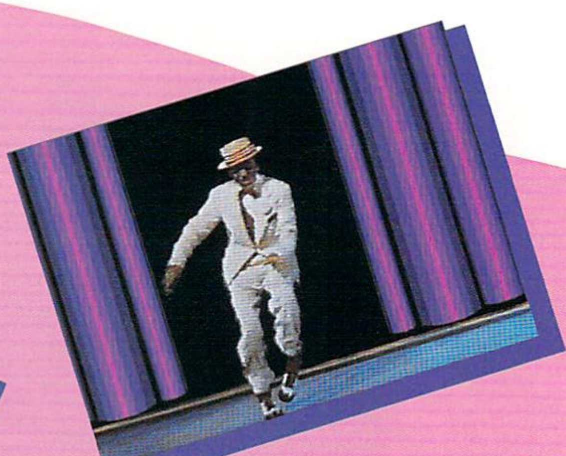
As with traditional animation, computer animation is based on the rapid sequencing of still frames to fool the brain into perceiving a single, fluid motion. What makes computer animation unique and categorizes the programs is the way in which the frames are created. The two basic types of animation software are 2-D cel animators and 3-D object modelers. The differences are simple: In the 2-D cel metaphor (derived from the individual frames of cellulose film), the artist creates all, or most, of the frames by hand on screen. In the 3-D method, the animator takes the role of designer and director. After creating the object (or character) in a simulated three-dimensional environment, he directs the computer to display, illuminate, and move the object in its 3-D world.

Bursting into the Second Dimension

The most basic and essential tool for any animator, whether manipulating two or three dimensions, is a paint program. DeluxePaint (Electronic Arts) is the standard, as it has been from the start, against which all others are measured. In its latest incarnation, DeluxePaint III ($149, 1MB required) breaks the barriers of ordinary computer paint programs. By adding the animated Brush, author Dan Silva transformed DeluxePaint III from a paint program into a powerful animation tool. With this new feature, called AnimPaint, you can store a series of cels in a brush. Then, you can animate the brush as you paint, leaving either a trail (all frames) of the animation on screen or single brush impressions (individual

If you can't draw, digitize your images and import them into an animation program.





frames) across a series of screens. You can automate this process with the Move requester, which also provides for animated rotations, flips, and zooms over a range of frames, similar to the perspective tool in DeluxePaint II. When you are satisfied, save your animation to disk in the standard Anim format.

As exciting as DeluxePaint III is, it is not without shortcomings: The program's lack of support for Hold-and-Modify (HAM) mode, for example, continues to plague me. The third version does, however, support Overscan painting and Extra_HalfBrite (64-color) mode. Unless you absolutely need HAM, buy DeluxePaint III. I recommend it to everyone with an Amiga, even if you are not an animator.

LOW STANDARDS

Jim Kent, author of Aegis Animator (Aegis, $99.95), has incorporated several features of his (and the Amiga's) first animation program into his latest effort, Zoetrope (Antic, $139.95, 1MB required). Offering both paint and animation tools, the program could have been an all-in-one animation solution for professional users, except for a single limitation. Like the outdated Animator, Zoetrope supports only lo-res (320×200, 32-color) mode.

Zoetrope's user interface isn't pretty, but it is efficient and smooth. Some features are truly wonderful: A paint program is built in for creation and touch-up. The APM (Automatic Pixel Mover) can make a brush perform just about any twist, zoom, or flip effect. The blueing feature speeds up the drawing process, while true compositing lets you mix different images into one frame and matches colors automatically. You even can use multiple palettes in a single Anim. Easy-to-edit scripts and a great frame editor facilitate fine tuning. Unfortunately, these powerful features are wasted in a lo-res world unsuitable for anything other than casual, non-professional work.

CUT! SET IT!

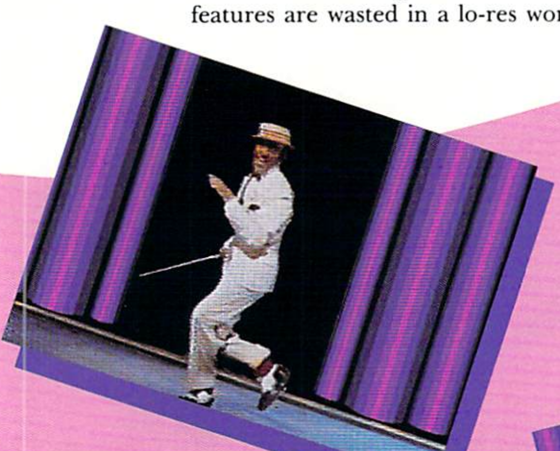
A fellow sufferer of the lo-res straightjacket is MovieSetter (Gold Disk, $99.95). Probably the most intuitively-controlled animation program ever, MovieSetter lets you manipulate all of your characters and pieces on screen—what you see is what you get. Menus are displayed down the sides of the work area, out of your way. Although your characters are limited to lo-res, backgrounds can be overscanned images, eliminating screen borders. MovieSetter accepts ILBM (InterLeaved BitMap) IFF pictures and brushes for use as background or foreground images. The program, however, lacks Anim support.

Creating an animation with MovieSetter is a three-step process. You create and preview your character's actions (a set of frames) in the Set Editor. The Scene Editor then uses the group of frames to create tracks, which when combined, form a scene. As in a film, you string together scenes to finish your animation. By running the Player you can view your creation. Although the method sounds complicated, it is not. To jazz up your work, you can add special-effects tracks, including background wipes, sound effects, color cycling, looping, and background scrolling.

While it has serious limitations for professionals, MovieSetter is great for almost everyone else.

CHILDREN'S FANTA-SY

Fantavision (Broderbund, $59.95) also borrows from Aegis Animator. Like Animator, Fantavision uses two-dimensional objects and a technique called morphing ►







for its primary character animation. With the supplied tools, you draw shapes and place your creations on the screen in their starting positions to begin the animation. Next, draw a second character shape and place it where you want the action to end. Finally, tell the program to begin the sequence. Through morphing, the character moves from the starting point to the ending point, smoothly changing its shape along the way. Although it is a lot of fun, the software has a somewhat limited application in the real world. Professionals require finer controls than the program offers, while creating and positioning morphs is quite time consuming. At least Fantavision supports all Amiga graphics modes. You can import brushes (but not morph them) or use IFF pictures as backgrounds. You can easily add sound effects as well.

Fantavision is a great program, particularly for children and grown-ups who want nothing more than to have fun with their computers.

Talented Triumvirate Plus One

For the creative person who can't draw, 3-D modeling software promises Nirvana. Once you try it, though, you quickly find that there are some major limitations. Rendering in 3D takes time—a long time. Designing a smooth, realistic-looking head involves defining hundreds, even thousands, of points. Even with the computer doing all of the tedious work, rendering a single frame of an image can consume many hours. Don't get me wrong, I desperately want this technology to work; it is the future of animation.

Sculpt-Animate 4D (Byte by Byte, $499.95, 1MB required) is arguably the most popular object-oriented animator in the Amiga universe. Unfortunately, it is not the most friendly environment in which to create.

The major flaw in this oversized gem is its three-window user interface. Frankly, it gets in my way. Front, top, and side views are appropriate for the ancient art of drafting on vellum, but not for the computer age. Byte by Byte needs to do more work before this style of animation is ready for the masses.

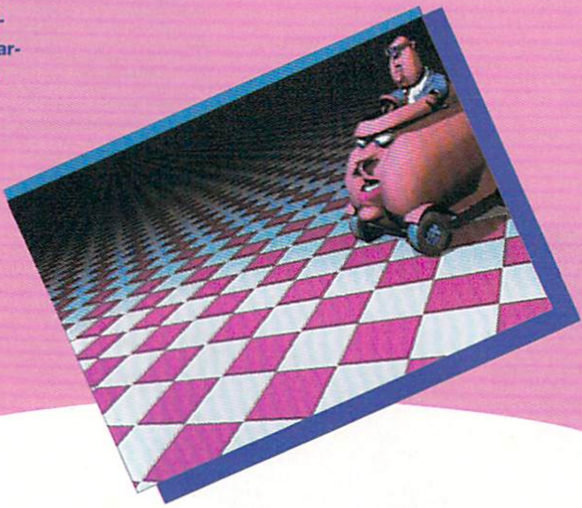
User interface aside, Sculpt-Animate passes my simple checklist easily. It supports all graphics modes, creates ILBM and Anim files (of a sort), and comes with a well-written and comprehensive manual. For those without a megabyte or a megabudget, Byte by Byte offers Sculpt-Animate 4D Jr. ($149.95), which does not support ray tracing.

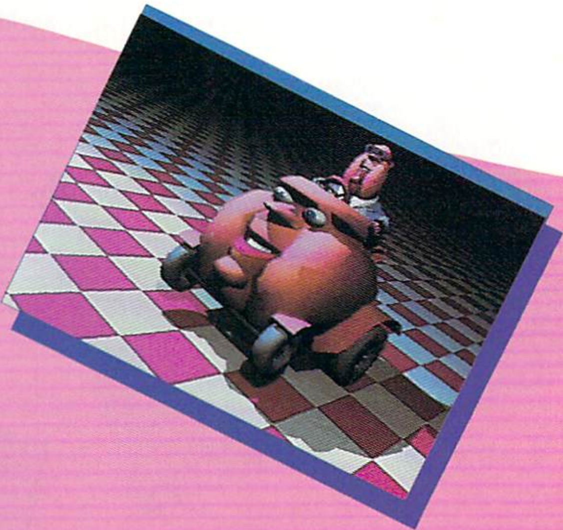
The challenger to Sculpt-Animate's throne is Turbo Silver 3.0 (Impulse, $199), my favorite of the big three. Its power is a lot more accessible, it renders faster, with excellent quality, and it can map bit-mapped images onto the shapes it creates. Creating animations is easy and straightforward. The program, however, suffers from the same user-interface problems as Sculpt-Animate. The manual is skimpy, but I found it to be sufficient.

Last, and least, is VideoScape 3D (Aegis, $199.95, 1MB required), the pioneer 3-D program for the Amiga. You would think that after all this time, Aegis would have all of the bugs worked out. Wrong. Even in the most recent version, objects occasionally show through supposedly solid planes.

The addition of a z-buffer, which saves more points in memory, was supposed to correct flaws in the program's ability to join shapes. It does help, but it increases rendering. With the z-buffer turned on,

With 3-D animators, you become designer and director—creating your characters and moving them around the stage.





rendering times approach or surpass those of Sculpt-Animate and Turbo Silver, without those programs' subtle lighting effects. On the plus side, VideoScape can produce frames in any Amiga mode and save the resulting sequences as Anim files.

A long-promised but recent arrival, Caligari Pro (Octree, $1995, 1MB required) has two things on its side—a great user interface and speed. Caligari uses a true three-dimensional environment for nearly all of its functions. You create the object in 3-D, tweak it in 3-D, and render it in 3-D. The rendering times are phenomenally short, but only solid shading is supported. With Caligari, however, you are animating on a dead-end street; it does not support IFF, ILBM, Anim or any other Amiga format. To top it off, be prepared for sticker shock; all this can be yours for the unmatched price of almost $2000.

Sorcerers Only

Out in front of the 3-D pack, but slightly lost, is Animator:Apprentice (Hash Enterprises, $295, 1MB required). Apprentice is designed to overcome the limitations of the current 3-D modeling approach by allowing you to create life-like character animation.

I was excited when I first saw how Apprentice worked. To create an animation, define an action using a quickly drawn stick figure and add a drawing of the character's appearance. The program does the rest: puts the body file on the bones, draws it from any aspect or view, adds lighting and shadows, and creates the final sequence of frames. It seemed too good to be true.

It was. The first hurdle was the interface—what there was of it. The feeble attempt at a manual did not clarify anything. Finally, faulty rendering kept forcing me to touch up my frames afterward; the front, back, and side views of my characters would not join properly.

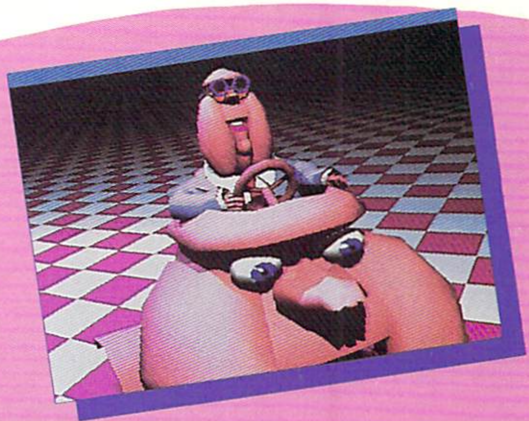
I like the idea and technique behind Apprentice, and I want it to work. In fairness, the manual for the latest release, 3.0, has been professionally rewritten and is somewhat more helpful. The interface is still weak, although the interfaces of subsequent Hash companion products look much better. I think that, over time, Animator:Apprentice will improve, only because this seems to be a labor of love, not a commercial enterprise. I am looking forward to the next version.

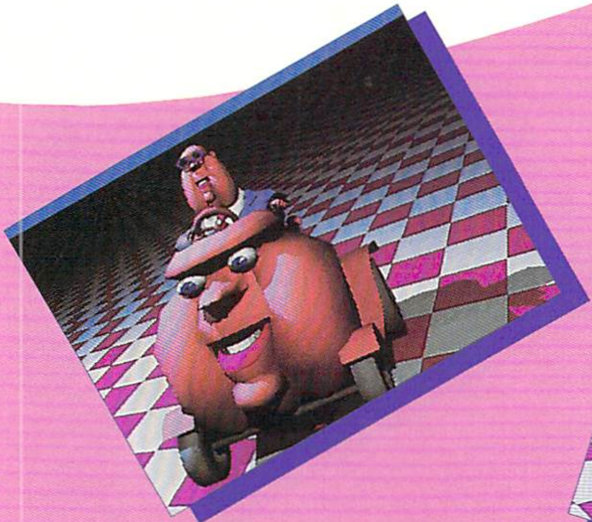
Sticky Stuff

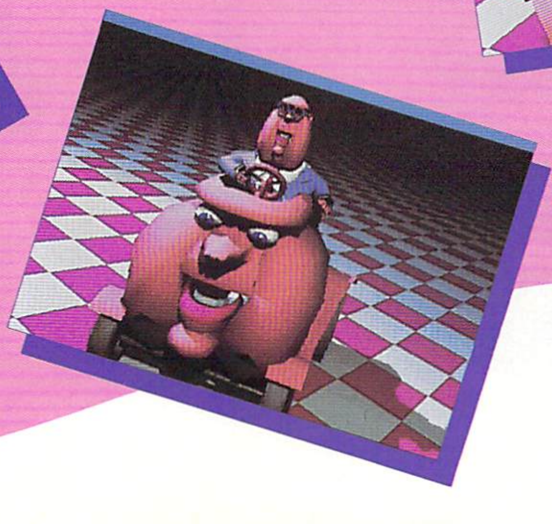
Although it is not an animation program at all, The Director (The Right Answers Group, $69.95) is the most powerful animation tool I use. The program acts as the glue that binds together all of the elements of your animation.

An easy-to-use graphics programming language (similar to BASIC), The Director gives you precise control of the Amiga's graphics displays, as well as many of its low-level functions. Once this power is in your hands, you will be hooked. I have built everything with it, from a simple slide show with sound to a complete hypermedia environment with clickable buttons, text screens, scrolling pictures, and even short movies. The Director supports all of the Amiga graphics modes and formats. If you have your own studio, this program is a must.

Professional animators can further automate their work and save some preproduction time using Photon Video: Cel Animator (MicroIllustions, $149.95, 1MB required), a 2-D pencil-testing program. Cel Animator lets you flip through previously created ►







frames in any order at variable speeds to test your character's motion. The program supports IFF and Anim files in all resolutions, and will decompress Anim files into IFF frames. You can even synchronize your animation and sound track. With Cel Animator's companion program, Photon Video: Transport Controller ($299.95), you can transfer your creation to videotape through a single-frame controller.

IMPERSONATIONS

Many of the software limitations and flaws I have discussed are the result of decisions made by the designer of the software. We of the Amiga community should speak up and tell the programmers what we want, rather than letting them decide what is best for us.

As Andy Rooney would say, have you ever wondered why software publishers ignore the benefits of shared formats? It certainly does not help the sales of their products. How many times have you tried to play someone else's animation only to find that you did not have the correct software? Why do programmers feel that they have to protect me from myself? I can decide which graphics format is best for a particular animation. Please, give me a choice!

Most annoying 3-D programs are memory hogs. Just because the Amiga has a large memory pool, programmers should not have the exclusive right to use all of it. It's my memory, I paid for it, let me use some of it. The Amiga is a superb graphics engine, with some great software designers behind it. Just think what we could do if we really had access to all of its power!

Of the current crop of software, MovieSetter is the best choice for those just venturing into animation. The intuitive controls and extras, such as color cycling and sound-track syncing, make it a program you can find your way around in quickly and still have room to explore. I would use it more myself, if it were not limited to lo-res.

For the pro, DeluxePaint III and The Director are essential tools for your studio. They are the workhorses I reach for continually. Like a favorite vacation spot, they will never disappoint you.

Still a few miles down the road, DeluxeVideo II (Electronic Arts) holds great promise for professionals. It should support all graphics modes, IFF and Anim formats, genlocks, single-frame controllers, and MIDI devices. Preliminary versions appear to address many of my standard gripes. My guidebook and I eagerly await its proposed fall release. ■

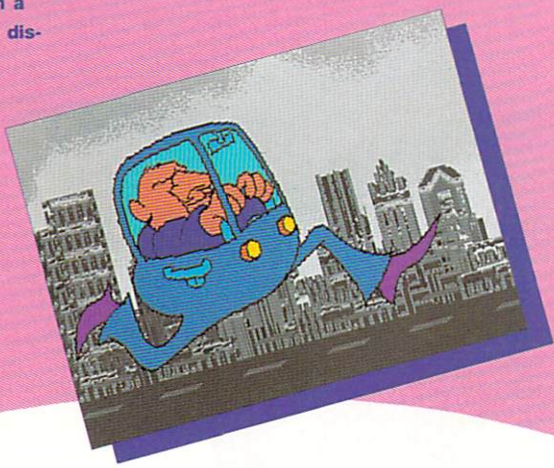
Gene Brawn is a graphics designer, television director, computer game programmer, and digital animator. In his words, "Digital animation is the wave of the present!" Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

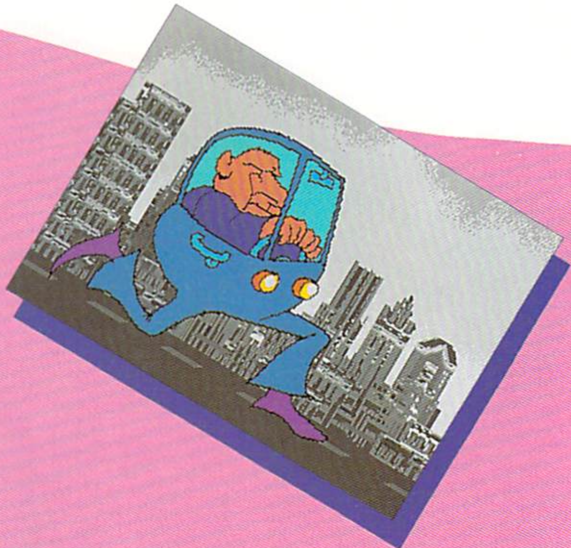
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►

For cel animations, you draw each screen in a paint program, then display them in quick succession.





Manufacturers' Addresses

Aegis Development
2115 Pico Blvd.
Santa Monica, CA 90405
213/392-9972

Antic Publishing
544 Second St.
San Francisco, CA 94107
415/957-0886

Broderbund Software Inc.
17 Paul Dr.
San Rafael, CA 94903-2101
415/492-3500
800/527-6293

Byte by Byte
Arboretum Plaza II
9442 Capitol of Texas Hwy. N.
Suite 150
Austin, TX 78759

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Gold Disk
PO Box 789, Streetsville
Mississauga, Ontario
Canada L5M 2C2
800/387-8192 (US)
416/828-0913

Hash Enterprises
2800 E. Evergreen
Vancouver, WA 98661
206/693-7443

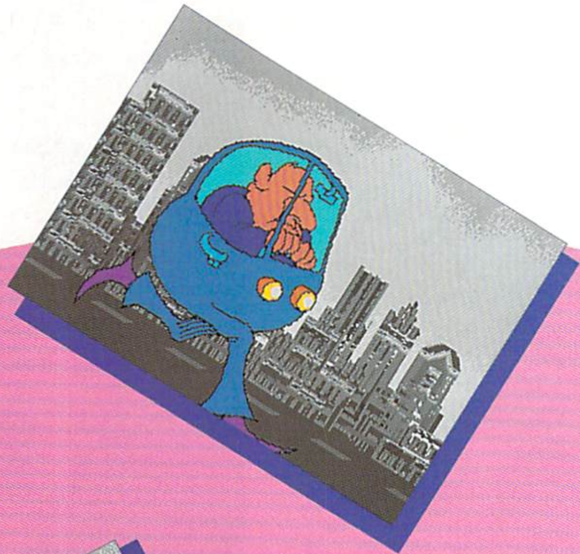
Impulse Inc.
6860 Shingle Creek Pkwy. #110
Minneapolis, MN 55430
612/566-0221
800/328-0184

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818/360-3715
800/522-2041

Octree Software
311 West 43rd St.
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GUMBY MEETS GODZILLA

**OR
HOW ANYTHING IS POSSIBLE
WITH STOP-MOTION ANIMATION
ON THE AMIGA**

BY GENE BRAWN

FIFTY-SIX YEARS ago, movie audiences marveled in awe as a gigantic ape clutched the lovely Fay Wray in one hand while swatting down biplanes with the other as he stood astride the top of the Empire State Building. The huge, ferocious, and utterly convincing behemoth—King Kong—was actually no bigger than Ms. Wray's delicate little hand. He was a five-inch model ape created by Willis O'Brien.



To bring his miniature creature to life, the young animator borrowed an old technique from the silent-film era, stop-motion photography, and spawned an interest in productions "starring" animated three-dimensional puppets that spans more than fifty years. Moviemakers and animation artists have returned to stop-motion techniques over and over again—in such classics as George Pal's Puppetoons and Ray Harryhausen's remarkable Sinbad sagas, and right on up to the current TV-commercial sensations, the California Raisins.

The new wrinkle, however, that grabs our imaginations today involves personal computers such as the Amiga and video. While most professional stop-motion animators of the old school have shunned computers and video, still preferring to record on film, amateur animators are discovering the Amiga provides a more manageable, and sometimes more exciting, method—and one that will certainly make the time-honored technique of stop-motion animation more widely available to the layman.

GEARING UP

Before we find out how the Amiga fits into the picture, let's examine stop-motion animation in a little more detail, and then discuss what other equipment we will need and consider some basic procedures to keep in mind before you start.

The term "stop motion" is nearly as old as cinema itself. Long before the invention of optical printers, blue screens, or computer-controlled cameras, special effects were actually created by the film's cameraman,

not afterwards in the lab. For example, a very common visual trick was the simple "pop off," or vanishing effect, which was accomplished by *stopping the motion* of the camera while the actor walked off the set. With King Kong, Willis O'Brien simply applied this technique to an inanimate object. After exposing each frame of film, he stopped the camera while he moved his puppet a fraction of an inch, repeating this process 24 times for each second of film.

As you can see, traditional stop-motion animation is a slow, tedious, and exacting process. Soon after you begin your first sequence, you will probably begin muttering to yourself that there must be an easier way. This is where your Amiga will come into play. For right now, trust that with its help you will be free to concentrate on the most important aspect of the creative process—bringing your ideas to life. Your perceptual and observational abilities are your most important tools. The right software, hardware, and technical proficiency are important, but don't get hung up on them. Instead, concentrate on being an observer and an interpreter. Remember that behavior, body language, and, above all, timing are the most critical elements of the successful stop-motion animation. ►

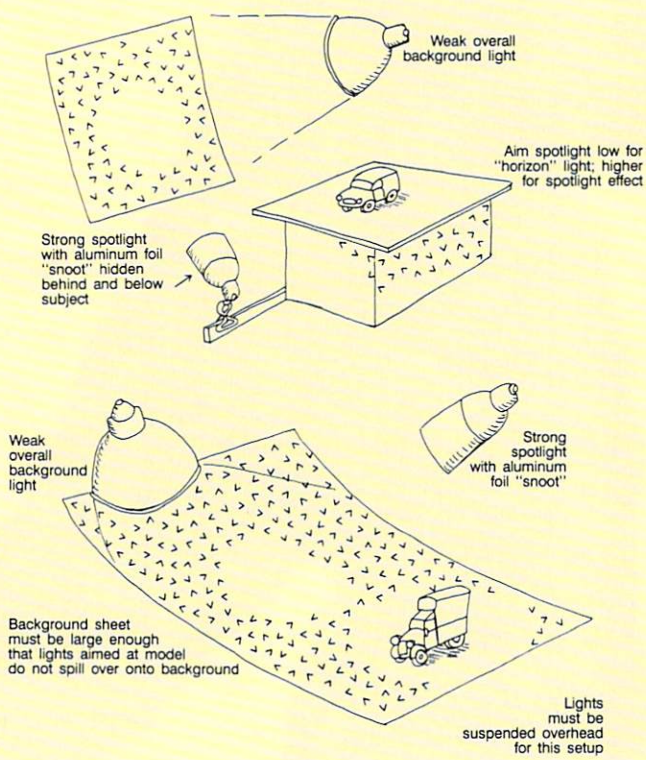




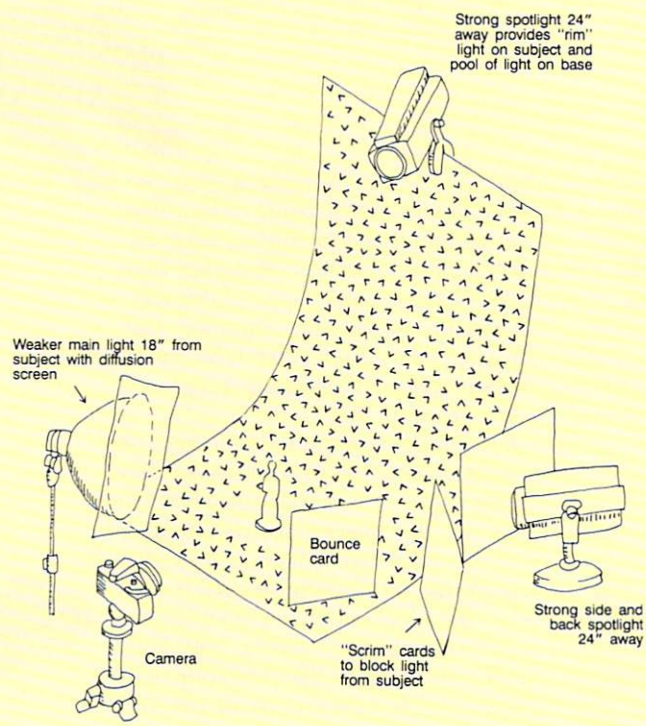
As far as necessary equipment goes, you may already have all of the software required to create your stop-motion masterpiece: a paint program, an image processor and an animation maker and player. My personal preferences are Electronic Arts' recently released DeluxePaint III ($149.99 / combines paint and animation capabilities) and the same company's Deluxe PhotoLab ($149.99 / image processing and HAM paint), although any number of other programs will do a serviceable job. (See the Graphics/Video section of "The Great Software Buyer's Guide," *AmigaWorld*, Dec. '88, p. 36 for other programs.)

Hardware requirements are a little more extensive. I use Digi-View (NewTek / $199.95) for my digitizing and preliminary image processing, a Panasonic WV-D5000 CCD color camera, SunRize Industries' Color Splitter ($99.95) and a multi-purpose copy stand called CopyGym ($250) of my own design. Again, as far as digitizers and other Amiga-specific hardware go, there is a variety of perfectly adequate equipment on the market that will do the job. (For more information, consult the Graphics/Video section of "The *AmigaWorld* Hardware Buyer's Guide," p. 38, in the March '89 issue.)

If you want truly professional results, pay particular attention to lighting. I strongly recommend that you invest in at least four low-cost fluorescent lights. These are ideal for establishing an even, bright base light over the entire set, and they give you excellent control of depth of field. Proper lighting is extremely important. Many times you will be shooting more than one character in the same scene. If you do not have enough light, you will not be able to maintain focus on all of them. You could shoot each figure separately and combine them later (which might be helpful for complicated scenes), but this adds another level of complexity that you do not need when you are just starting out. Normal photographic studio lights are usually too powerful (and hot) for tabletop work. Instead, I use high-intensity, focusing flashlights for my key (spot) lighting. With this setup you normally will not need a fill light. You will, however, ►



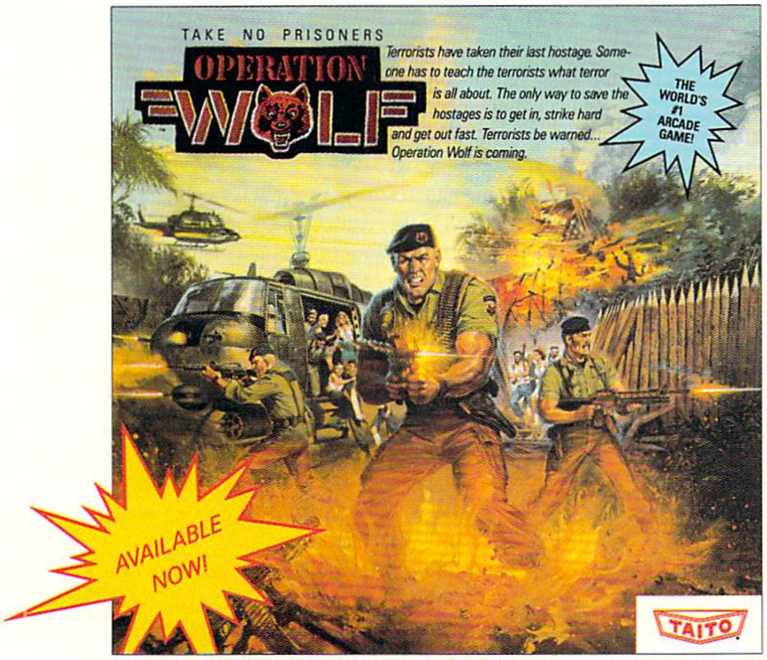
TWO WAYS TO LIGHT A BACKGROUND UNEVENLY



A SETUP FOR PHOTOGRAPHING SINGLE MODELS

Reprinted from *How to Photograph Scale Models* (Kalmbach Books).

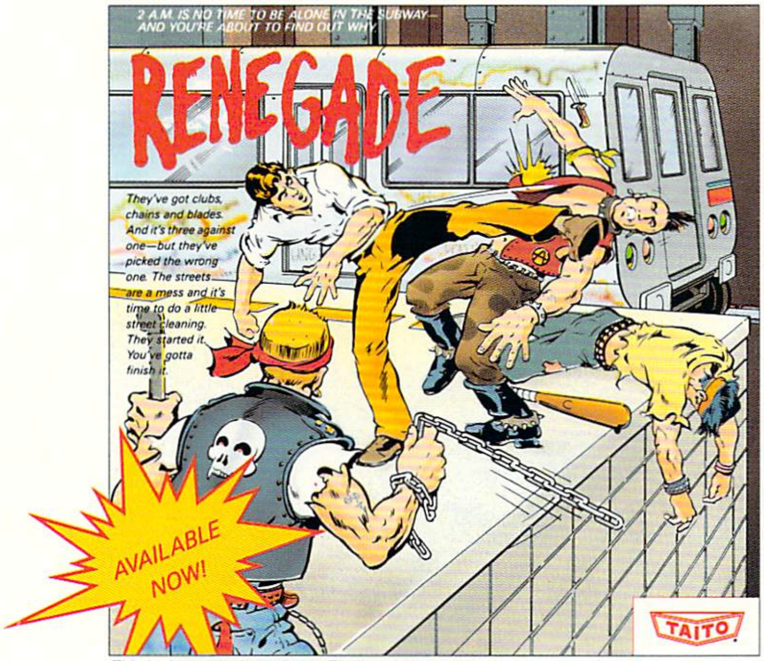
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need a backlight to keep your puppets from blending with the background.

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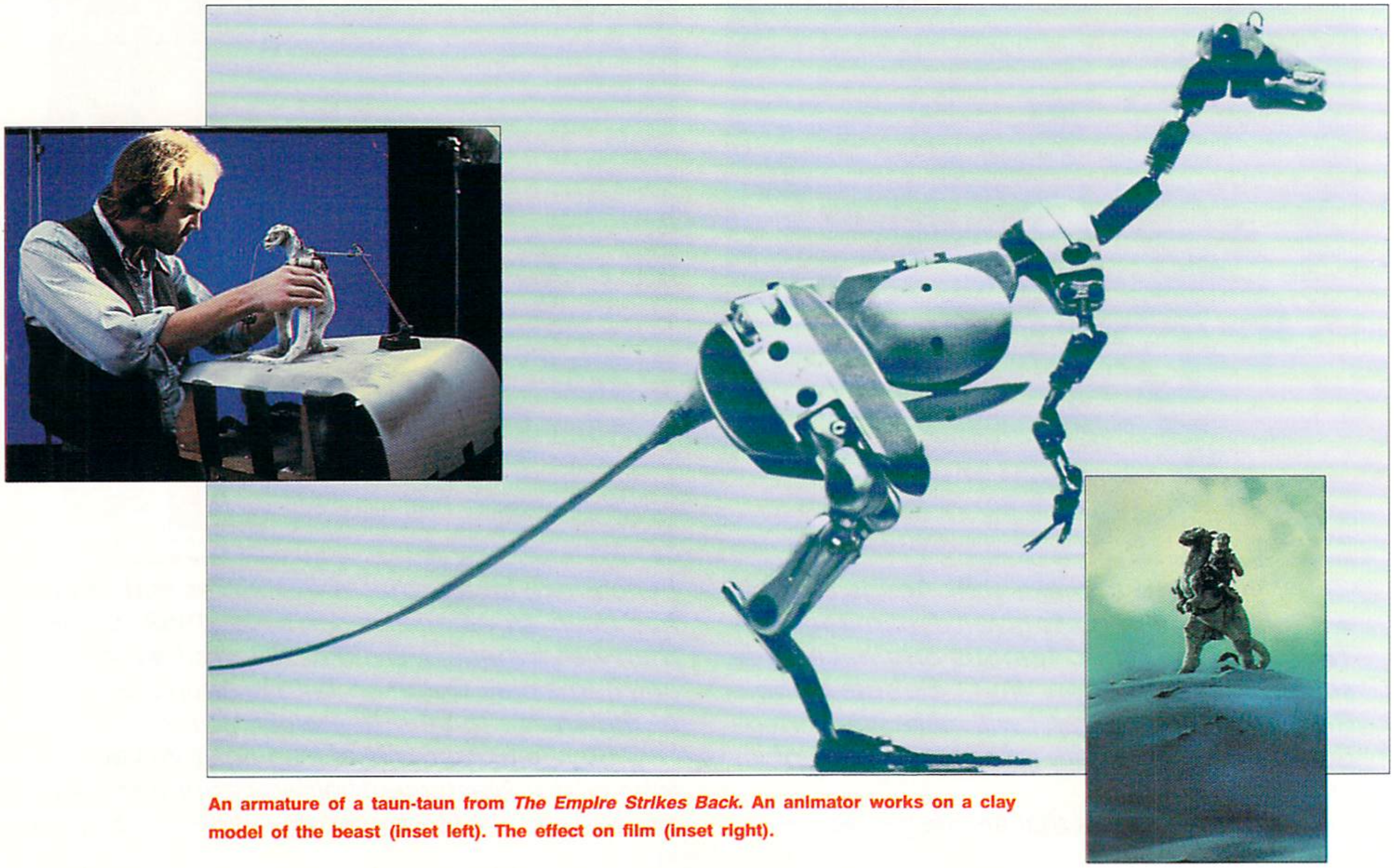
We have a few more pieces of essential groundwork to cover before we start our animation—namely, choosing a set, positioning the camera, and (most essentially!) casting our characters.

You will, of course, need a place to shoot your opus. This can be anything from a child's dollhouse to an elaborate tabletop shooting stage. When you're just starting out, though, it is a good idea to keep things simple. The set's "floor" should be kept low enough so that you can sit in a chair while you work (you will appreciate this, I guarantee, several hours into the process!). An old coffee table is ideal. Be sure to leave plenty of space around the sides to give yourself room to work with the figures or to rearrange the set. You will also need a vertical board or frame at the back of the set so you can set up scenery, backdrops, or photographer's seamless paper.

Mount your camera on a heavy-duty tripod. Get the best one you can afford; you will have enough on your mind without having to deal with a wimpy tripod that keeps sagging or bouncing around. The camera and tripod are normally placed on the floor a short distance from the front edge of the table. Be sure to leave enough room so that you can work on the set without fear of accidentally bumping the camera. This is very important! If you inadvertently change the camera position in the middle of shooting a sequence, it may be impossible to reposition it accurately and you will have to reshoot the entire series of frames.

When it comes to finding their actors, traditional stop-motion animators—much like modern sculptors—build their own characters by carefully layering Latex or modeling clay over a metal armature. This process can be a lot of fun, but it does require a certain amount of skill and the right equipment. If you are just starting out, don't become preoccupied with the mechanics and construction of your characters. Instead, concentrate your energies on the process of storytelling and movement. A simple blob of clay endowed with a convincing personality is a lot more effective than a super-realistic puppet with jerky or unbelievable motions.

An easier and more expedient approach is to look for "ready-made" subjects. Check out your attic or basement, or raid your children's toyboxes. Better still, go to a toy store and poke around in the section with the "action figures"—those plastic replicas of characters from Saturday morning cartoons and popular movies. What you want is a *poseable* character. Choose one with as many joints as possible; the more ►



An armature of a taun-taun from *The Empire Strikes Back*. An animator works on a clay model of the beast (inset left). The effect on film (inset right).



Coming To A Screen Near You.

If you're ready to become your own studio producer, there's only one desktop video system that will bring NTSC and S-VHS to your Amiga's screen. The Scanlock system by VidTech. Other systems give you a genlock that's "either-or." They either support NTSC or S-VHS. But not both.

Two For One

With Scanlock, you get two genlocks for the price of one. So you can migrate from NTSC to the newer S-VHS format without investing in another system. We also offer a Scanlock model that is compatible with the International PAL TV format, including its new S-VHS version.

Scanlock's dual-genlock system gives you broadcast-quality video at consumer prices. And our system offers all the bells and whistles, including front-panel fingertip controls, multiple monitor connections for viewing and editing, and independent fade controls for both reference and Amiga videos. If your Amiga is supporting a load of peripherals, we provide a connection that lets you use an optional external power supply.

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VidTech

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ways you can bend it, the more realistic the final result.

Models made from rubbery plastic shaped over a wire also work well. A puppet of this type can be bent to nearly any position and will hold its pose. (I have found several "Gumby" and "Noid" figures of this type and have had a good deal of fun animating them.) If the models are available in different sizes, choose the larger ones. A small model is too hard to position and will inevitably lose its pose (but so slowly that you may not notice it until you view the completed animation).

Okay! Let's Get "Moving!"

Now that you have built your stage and auditioned your cast, it's time to get down to the real nitty gritty of production. This is complex work and requires your undivided attention (you seriously might want to consider locking the door and unplugging the phone). There is nothing more frustrating than having to stop in the middle of a move, only to return and realize that you cannot remember whether you were moving some character's arm up or down.

You will be impatient to see what you can do, but resist the temptation to hurry. Start small, try something simple first. For example, have your character turn and wave at the camera. This move requires no more than 15 to 20 frames and is a good way to get a feel for the timing, speed, and production routines you will be using throughout.

When you are ready to move on, begin by planning out what you are going to do. Draw stick figures representing the key scenes of your production. This is called a storyboard and it helps to keep you on track. With a VCR and a stopwatch, try out a variety of sequences and time them. Videotape yourself performing a move and then review it, noticing those little motions that add character to the action. If you do not have a tape deck, use a full-length mirror for your trial sequences (Walt Disney used this technique for years).

If the action you are planning takes two seconds to complete, a VCR would record 60 *video* frames at 30 frames per second (fps).Unless the screen image of your object is very small, you will not be able to achieve this rate in your animation and still maintain good image quality. I usually try for a more reasonable 12–15 fps.

If you cannot get your character to move faster than eight frames per second, the action will appear to be very jerky. Trying to minimize the jerkiness by reducing the distance your model moves between frames usually results in unnaturally slow motion. In addition, your file will be huge because you must create many more frames to complete the same action. Normally, the tradeoff is not worth the effort.

The most common cause of sluggish animation performance is referred to as "shimmer," or "noise," an effect similar to that of looking at something through heat waves coming off a hot road, or viewing a TV picture through cellophane. It is caused by slight differences between individual frames. If you are working with Anim-format files (the popular IFF animation-file format for displaying compressed scenes of animation developed by Aegis/Sparta), remember that Anim files are compressed by saving only the differences between frames. If you minimize those differences, your completed Anim file will be smaller and will run faster. There are several techniques you can use to reduce the amount of shimmer:

- Keep the image small. This reduces the size of the areas that can shimmer. One-quarter to one-third the size of the screen is a good rule of thumb.

- Shoot in black and white and add the color later. Color images have significantly more noise in the picture.

- Shoot the action against a black velvet cloth. Even though the background may be static, it can still shimmer; the soft, heavy, dark quality of the velvet will minimize any shimmer here.

- Increase the contrast and reduce the sharpness of your images. This will give you smoother, more solid colors—meaning fewer changes from frame to frame.

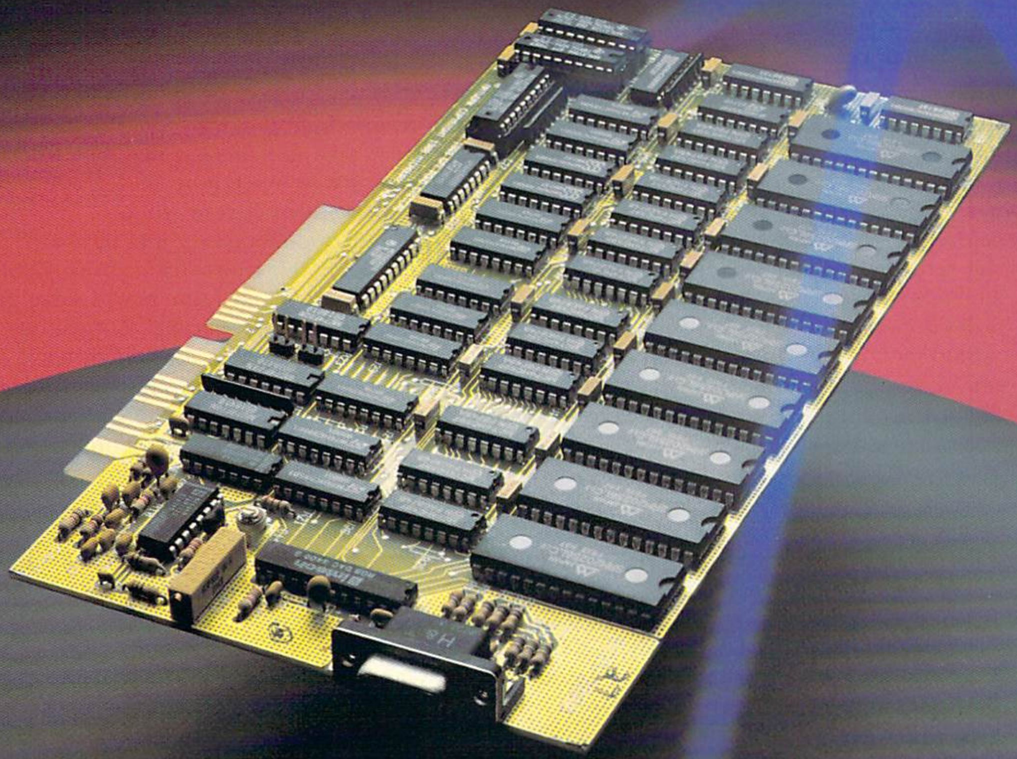
- Reorganize your color palette so that the colors you use most often are grouped in the lower registers.

- As a last resort, you can retouch each frame by hand in a paint program, or use an image processor, such as PIXmate (Progressive Peripherals / $49.95), to smooth the image. Obviously, this adds a lot more time to your efforts, so do as much as you can when you first capture the image.

Getting back to the problem of jerkiness, the difficulties appear even trickier. There are, however, steps you can take to make your animations seem more natural. Even professional stop-motion animators suffer from the criticism that their efforts seem unnatural or jerky. This is not a shortcoming on their part, but an artifact of the stop-motion process. For example, you could duplicate, frame by frame, a baseball player swinging at a fastball. Suprisingly, when you replay the sequence at full speed it still looks jerky. This effect is called "strobing."

The problem here is that the stop-motion process is too good, too perfect. A normal television camera, film camera, or even your eye cannot capture each step of the sequence cleanly—some of the frames will be blurred. This effect itself, however, suggests a solution. Load each of those frames representing the most rapid point of the action into a paint program. Grab each one as a brush and drag it *away* from the ►

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direction of motion and smear it for a few pixels. Then, reinsert these frames into your animation for a more natural effect.

C'mon, Baby, Do the RotoMotion

Nearly all traditional stop-motion animators use a tool called a Head (or Surface) gauge (available from many machinists's supply firms for about $50). Simply a metal pointer on an adjustable arm, this tool is used to mark the position of the puppet during the last frame while the animator poses the model for the next. The reason for this is that, as we mentioned before, most professional stop-motion animation is still recorded on film, so there is no way for such animators to see what they have done until the film is developed—they are effectively working blind.

Stop-motion animators using the Amiga, however, can make use of a wonderful alternative to the traditional procedure. Using a genlock, Amiga animators can avoid the painstaking work of using a Head guage and the hit-or-miss anxiety of working blind.

As an example of how a genlock can help your animation efforts, I took an old animation process called Rotoscoping (tracing a projected photograph directly onto an animation cell to create a new character) and combined it with a video process called Keying (combining two video images to create a single image). The result is something I call RotoMotion. In addition to your normal digitizing setup, you will need a genlock with fader controls, such as Digital Creations' SuperGen ($749.95) or Magni Systems' Genlock Encoder System I ($1695–$1995).

Feed the output of your video camera into the "reference" input of your genlock. Set the fader controls so that only the camera input is fed to the Amiga. Digitize the first frame of your stop-motion sequence. Next, "split the bars" so that both the live and the newly digitized image appear on the screen. You can now position your puppet based on a direct comparison with the last frame. Reset the bars so that only the camera image appears. Digitize the next frame. Repeat the process for as many frames as necessary. It is amazing that such a simple procedure can save so much time, and produce such dramatic improvement in your work.

Our stop-motion tutorial has barely scratched the surface of this truly exciting area of animation. Take the concepts and techniques I have presented as a foundation, not as gospel. A great deal of the fun of animation is trying new things, being an innovator. As mentioned before, most of the artists currently producing stop-motion animations have—for whatever unknown reasons—shunned video and computers altogether, preferring the traditional film route. This puts us—the Amiga animators, whether professional or amateur—in the position of being new pioneers. Think of Willis O'Brien and his mighty model midget Kong, and welcome the opportunity to push the limits! ■

Gene Brawn is a graphics designer, television director, computer game programmer, and digital animator, who has employed stop-motion techniques in a variety of productions. In his words, "Digital animation is the wave of the present!" Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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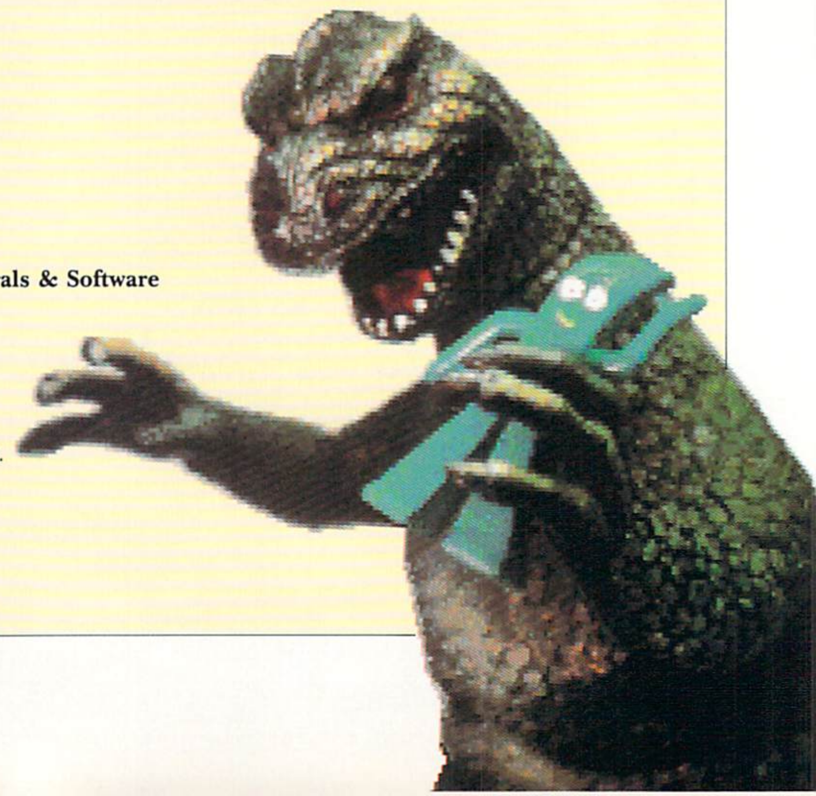
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You can't buy time, but you can save it if you have the right tools. WordPerfect Corporation's latest creation for the Amiga is WordPerfect Library, a collection of integrated programs to organize your appointments, notes and files. Whether you're a home manager or an office manager, Library was made for you.

Calendar keeps track of your daily schedule and will remind you of important appointments by sounding preset alarms. From your Calendar, you can print a daily list of appointments, notes, and things to do. Accomplishing is easier when you can chart your progress on paper, and Calendar lets you do just that.

At home, you'll want to use *Notebook* to organize important information. Addresses, phone numbers, recipes, home fix-it instructions, even decorating ideas can be easily sorted and accessed according to your instructions.

Notebook is every bit as practical in the business world. You can organize your telephone files in various ways: alphabetically, according to area code, or using any other factor you choose. Lists of clients and associates, too, are easily collected and categorized. All Notebook files are saved in WordPerfect format for easy transfer to WordPerfect documents.

Calculator, as you might guess, calculates. You can choose any of its financial, programming, and scientific functions. You might, for example, create a payment plan for a home or car loan, or calculate the future value of a savings bond. The scientific calculator can also help students, since logarithms, exponents, and trigonometry are among its functions.

Of course, Calculator is as valuable in the office as it is at home. You can access the Calculator without exiting your document, and then save your current state in Calculator. When you flip back to your document, your calculation remains intact for easy reference.

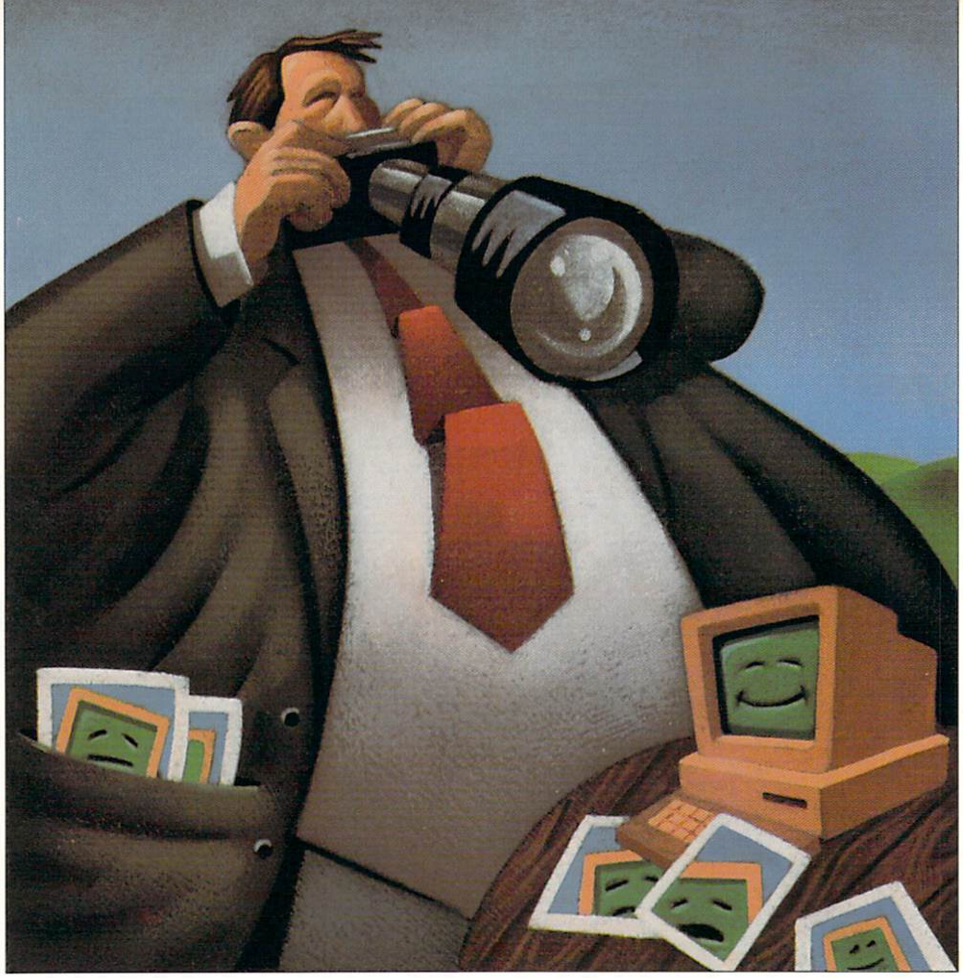
The list of Library's features goes on and on. *File Manager* helps you arrange, mark, edit, and print your files. *Program Editor*, with powerful features like hex edit and multiple block functions, lets you see and edit the codes behind your documents.

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Okay, You Guys, Freeze

Capture your on-screen video and graphics in the act

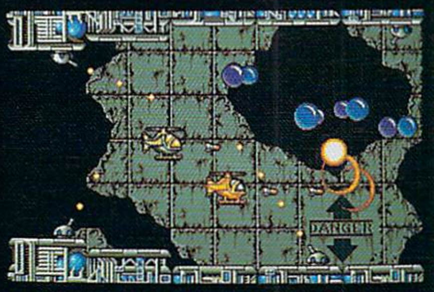
and book them to film with Polaroid's FreezeFrame.

TO TRANSFER A combination of live video and Amiga graphics to film, your previous choices ranged from simply taking a photo of the monitor screen, which can result in bowed images and visible scan lines, to purchasing a $100,000 film recorder, which can break your budget. A more accurate and affordable option is Polaroid's FreezeFrame ($1995), a film recorder that gives excellent results. Even though the FreezeFrame was not designed for the Amiga, the ►

By D. L. Richardson

ILLUSTRATED BY FRED LYNCH











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two form a perfect partnership.

Made to work with live video from a camera or VCR, the FreezeFrame differs from other recorders in that it accepts an NTSC (National Television Standards Committee) video signal, rather than a digital RGB signal. While the RGB signal is better quality than the video, the difference is not as great as you might think, especially when you consider the video signal's versatility and simplicity of control. The first film recording system for the Amiga, the Polaroid Palette ($1495) and Imprint interface ($495, Liquid Light), connects to the Amiga's serial port and captures only IFF graphics. By reading the video signal, the FreezeFrame can take pictures of a single frame of live video, Amiga graphics, and graphics superimposed over a live scene with a genlock. (For a direct comparison of outputs, see the sidebar "Photo Finish.")

The Lineup

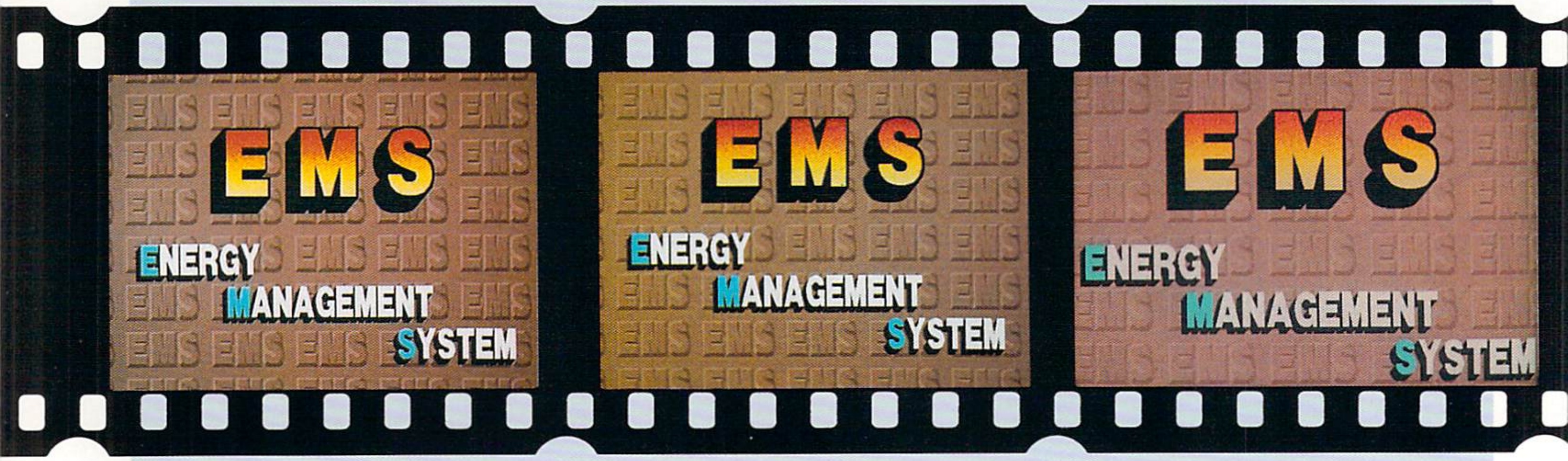
Unlike the Polaroid Palette, which requires Imprint, the FreezeFrame requires no special software to take a picture of the screen. Factory fresh, the unit comes with an instant camera for Polaroid prints. For more flexibility, you can also install the optional 35mm camera ($399) to shoot slides and prints. The camera will take any daylight film with a speed of 100.

Inside the FreezeFrame is a high-resolution black-and-white monitor and a color wheel. Similar to the Polariod Palette, the FreezeFrame takes a picture by making exposures of the image on the monitor ►

Photo Finish

A Comparison of Slides from the FreezeFrame and Polaroid Palette/Imprint System Film Recorders.

	FreezeFrame video cable	FreezeFrame Analog RGB cable	Imprint
Sharpness	Good	Excellent	Excellent
Scan lines	No	No	Sometimes visible
Ghost images	Sometimes, slightly	No	No



Imprint was the first film recording system made especially for the Amiga, so it is the standard by which others are judged. Imprint is based on an IBM version of the Polaroid Palette; Liquid Light adds the adapter box, cable, software, and manual for Amiga use.

All pictures were taken with Ektachrome 100 film. The slight difference in color balance is due to different emulsion numbers and processing, not the film recorders.

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This ad was generated entirely on an Amiga using Living Color™ and Gold Disk's Professional Page™.

through the red filter, then the green, and then the blue. Each picture takes 18 seconds, after which the unit automatically advances the film.

Connecting the FreezeFrame to the Amiga is easy. Run a common phono cable from the video output of the Amiga or a genlock to the FreezeFrame's video input. To see what you are capturing, connect a second cable from the FreezeFrame's output to your monitor's input. According to the manual you can also connect the FreezeFrame via analog-RGB or digital-RGB cables, but the latter are not available for the Amiga. For an analog RGB cable, you can either make one yourself or contact a custom cable supplier, such as Redmond Cable. Analog RGB output does improve the picture quality. The image will be slightly sharper, without the traces of ghost images that sometimes appear in video signals. The disadvantages of using the RGB cable are that you must disconnect the monitor to plug in the RGB cable, and you will also lose some controls.

The FreezeFrame's control panel is unique. It has buttons to select the film speed, toggle on autocolor, fill scan lines, preview, save a frame of video to memory, and print (take a picture). Sliders let you control the color saturation, tint, sharpness, contrast, and brightness of the image. When using an RGB cable, you give up the Autocolor, Memory, Color Saturation, and Tint controls.

Go Ahead and Shoot

To photograph a live scene or graphics superimposed over a live scene, press the Memory button to grab a single frame, Fill to hide the scan lines, then Print to take the picture. The results are less than spectacular, but your only other options for getting such a picture are buying a higher-priced recorder or snapping a picture of the screen yourself.

When photographing a graphics-only screen you can greatly improve the picture quality by using some undocumented techniques. For best results use an interlaced picture, int-res or hi-res. Be sure there is no motion on the screen, such as color cycling. Do not capture a single frame with the Memory button, and do not fill the scan lines. Be sure the Film Select is set properly for your film, and that all the sliders are centered. Then press the Print button to take the picture. If you use non-interlaced, lo-res or med-res graphics, follow the same steps, except do fill the scan lines.

The FreezeFrame's automatic exposure control is great for normal-contrast pictures. Problem images, such as titles on black backgrounds, however, require special brightness and contrast settings. To keep the background pure black and make the characters stand out, turn off the Autocolor, increase Contrast a notch and decrease Brightness a notch. Line drawings on white backgrounds need special attention as well. The automatic exposure tends to make the white background look gray. To keep it white, increase Brightness.

When you are finished with a roll of film, hold back the Rewind button. If the FreezeFrame sounds as if it is chopping up the film during rewinding, don't worry—it always sounds that way.

Lock 'Em Up

In addition to slides and prints, the FreezeFrame offers some bonuses for the professional and home user alike. For the small-video producer, the FreezeFrame offers an unexpected advantage: It can substitute for a proc amp (Processing Amplifier) in a video-editing system. You can use it to correct color balance, color saturation, contrast, and brightness. Home users can take advantage of the FreezeFrame's frame-grabbing abilities to record the frozen images on video tape, by hooking up the unit's video output to a video recorder's video input. Do not expect to use the frozen frame in a professional setting or to broadcast it, because it is not an interlaced signal.

Whether you need slides for business presentations, art exhibitions, or to send to your Aunt Mabel, give the Polaroid FreezeFrame some serious consideration. The unit is made to order for trapping live video or graphics genlocked over video to film. Although more expensive than the Palette and Imprint, the FreezeFrame is equally hard to beat for quality of straight graphics slides. If you need a large volume of prints and slides, you will quickly make up the extra cost in the time and frustration you will save. ■

D.L. Richardson has a Master's Degree in Motion Picture Production and currently produces industrial videos and slide shows. You can write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Manufacturers' Addresses

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Page-Flipping Animation

5

An occasional series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

BY WAY OF incentive for getting involved in "Accent's" topic this month—page-flipping animations—consider this: The Bay Area Amiga Developers Group (BADGE) in California hosts an Amiga animation competition each fall, the BADGE Killer Demo Contest. Grand prize is an Amiga 2000 system from Commodore, with generous additional prizes from other Amiga hardware and software manufacturers. Just about every computer animation style and technique is represented, from screen-hacks to math-intensive ray-traced page flipping. Last year, Brad Schenck's beautifully illuminated "Charon" received the grand prize. In 1987, my own "RGB Hazard" animation took top honors. Both of these pieces were created with a program called The Director and make use of an interesting feature of that software called partial-screen page flipping, or BLIT. This article will discuss page flipping in general, and some specific techniques as used in these prize winners.

Page flipping refers to the sequential display of a chain of successive images. When such a sequence is displayed rapidly enough, persistence of vision causes the eye to perceive that succession as smooth motion. This is what makes a series of images in a motion picture appear to move. You may also have seen "flip books," in which a sequence of drawings can be flipped with the thumb to produce the illusion of motion. Hence the term "page flipping."

In the Amiga, page flipping is accomplished by loading a sequence of images into the computer's memory, then rapidly displaying them to the screen, one at a time. Examples of software one can use to do full-screen page flipping are The Director (Right Answers Group, $69.95), Pageflipper Plus F/X (Mindware Int'l, $159.95), and Photon Video: Cel Animator (MicroIllusions, $149.95). Images can come from any source—digitizers, paint packages, math graphing software, etc.

Usually, the longer you can run an Amiga animation, the better the results. There is greater freedom to tell a story. Available memory, however, becomes a constraint to which a clever animator must adapt in order to lengthen running time. Reducing the amount of memory each image occupies increases the number of images that can be loaded and displayed. Carefully controlling the rate at which images are displayed can also save valuable memory.

Low-resolution images take up less memory space than high-resolution images. Reducing the number of colors can also reduce the file size. Color, however, must be reduced in certain stages. The key is the number of bitplanes involved in the display: six bitplanes are required for HAM, five bitplanes for 32-color, four for 16-color, three for 8-color, two for 4-color, and one for 2-color. Low-resolution, two-color pictures, for example, take up relatively little space. I usually work in low resolution, full 32-color.

The rate at which frames are shown is also a significant memory issue. Most films are shot at a rate of 24 frames per second. Video uses 30 images per second. Many cartoons were done at 12 frames per second to reduce the amount of labor. A basic question arises: How few frames per second can you use and still convey the illusion of smooth motion to the eye? Knowing this limit, an animator can plan how much incremental movement to create between images. I find that I can sometimes get away with about eight frames per second, depending on the subject and the amount of movement between frames. If an animated character needed to raise its hand to its face in half a second, Walt Disney

Perfecting memory-conserving techniques can enhance your page-flipping animations . . . and perhaps win you some recognition in the bargain!

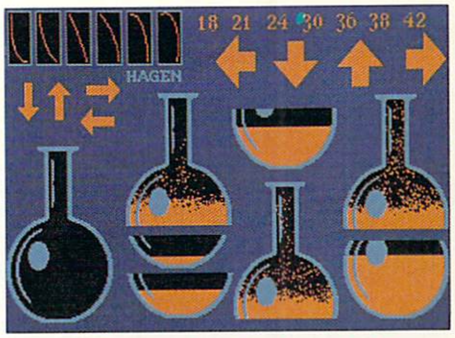


Figure 2. Component parts of an animation are "packed" into a single screen for later use.

might have drawn 12 frames to accomplish that movement. The economy-minded Amiga animator might get away with four, saving precious RAM space. Capturing an image sequence from a VCR with a good freeze frame, one need not capture every frame. Perhaps every fifth image will suffice, with an appropriate pause for each display.

FLIPPING ITS BLIT

Returning to the specific subject of this article, we find in The Director yet another opportunity for memory conservation. The Director is an Amiga-specific language designed for creating anything involving graphics, text, animation, and sound. One of its most powerful features is the BLIT command, which allows partial-screen page flipping. Using this feature, you can pack a single screen with many individual elements of a presentation, which you can then assemble at animation speeds on a display screen.

A single screen could, for example, contain arms in 20 different positions and five different faces for a character who has six body positions stored on another screen. A third screen could contain an elaborate background. The Director's BLIT utility allows you to pluck a body from the storage screen, put it on the background, add arms and a face from another screen, display the created image, then repeat the process with new pieces. Relatively long animations can be created using few screens.

This ability to grab any part of a graphic screen and display it, wipe it, or dissolve it anywhere else is a powerful option, and one reason we see so many elegant presentations done with The Director. Using partial-screen page flips in "Charon," Brad Schenck animated a knot tying itself and a flying bird. He also created whole screens of parchment from parts of one smaller piece on which he used BLIT repeatedly. This is real economy, letting the computer do part of the painting for you. I animated everything in "RGB Hazard," from moving arrows to my stretching nose, using partial-screen BLIT operations.

The space illustration (Figure 1) is from "Emissary," a new animation of mine involving discovery of an alien craft in our own solar system. Using partial-screen page flipping, this sequence of Mars' moon, Phobos, appears to zoom from a blurry dot to a large, sharp image on a data screen while the section of Martian surface scans into another window of that screen. The illustration of the chemical flask (Figure 2) is an example of packing all the elements for an animation into a single screen. Using BLIT, we could create an elaborate display screen for a smooth looping sequence in which the flask appears to be boiling while readouts of waveforms undulate. This screen demonstrates all the points of potential memory conservation I have discussed: low resolution, reduced bitplanes, and screen packing. So, pull up your Amiga and get an entry ready for this year's BADGE contest. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope.

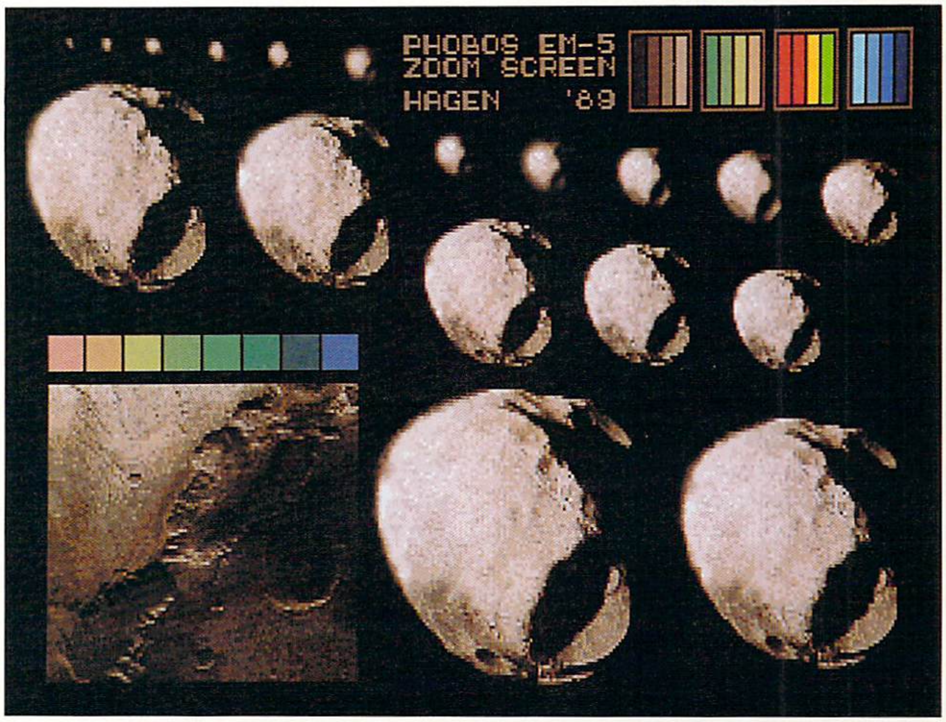


Figure 1. The moon Phobos appears to zoom into focus using partial-screen page flipping. Smaller window, bottom left, contains detail of Martian surface.

SPRUCING UP THE OLD BENCH—4*

Extras 1.3

Our mini-series on Workbench 1.3 concludes with a guided tour through that other disk that comes with 1.3: the Extras disk.

By Mark L. Van Name and Bill Catchings

**Editor's Note: This month, Team* info.phile *presents Part 4 of their latest AmigaDOS 1.3 "mini-series." While their previous collection ("Exploring AmigaDOS 1.3," Aug. '88–Dec. '88) focused on new or improved CLI commands, this series explores the other side of the AmigaDOS coin: the Workbench.*

EXTRAS 1.3 CONTAINS some useful tools and programs, but it poses something of a problem for those of us without hard disks. After all, the Workbench 1.3 disk is almost completely full, leaving very little room for you to add those "extras" that you will want to access often. In this quick tour, we'll point out which of those extras may be the most useful, and which ones you can pass up. We'll also make some suggestions for freeing up space on that crowded Workbench disk.

THE BASIC ROUTE

The largest single contribution of Extras 1.3 is Amiga Basic. If you need it, just copy its program and icon files from the main directory onto a bootable disk and you're ready to go.

Well, almost ready. You'll probably also want, at least for a little while, the demonstration programs in the BasicDemos directory. If you're going to be doing any serious BASIC programming, you'll also need the library description files in the FD1.3 directory. These files, which all end with the suffix .FD, unfortunately are not in the format that Amiga Basic requires. To convert them to that format, use the BASIC program ConvertFD in the BasicDemos directory—but you will have to compile it first with Amiga Basic. ConvertFD reads in a .FD file and produces an equivalent .BMAP file that Amiga Basic can handle.

DESTINATION: DEVS DIRECTORY

Next on our tour is the Devs directory. Devs contains two subdirectories: Keymaps and Printers. You almost certainly won't need all of the files in either of these subdirectories, but you may well want a file or two from each.

Devs/Keymaps contains alternate keyboard encodings for folks outside the U.S. If the language you need to use is one of the dozen represented here, then you're in luck. Just copy the key map file you want into the Devs/Keymaps directory on your Workbench disk, delete the standard usa1 key map that you'll find already there, and you're ready to go. If there is no key map for your country, you'll either have to make do with the standard U.S. mapping, or find the closest other key mapping.

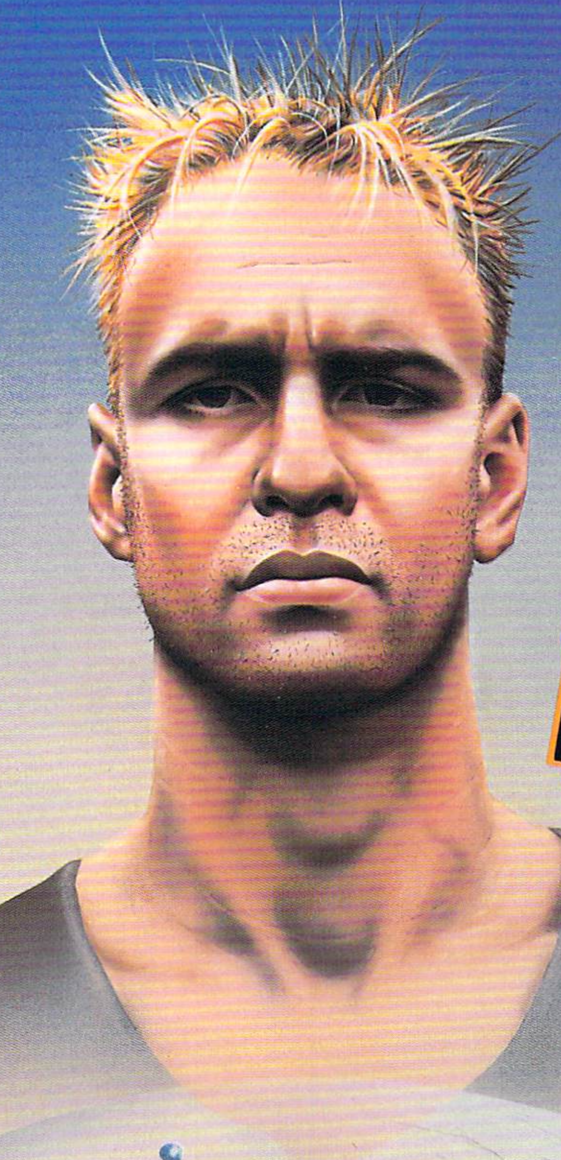
The Devs/Printers directory is one that most of us will need to get into at least once. It contains most of AmigaDOS' many printer drivers. Pick the drivers for the printers you use with your Amiga, and copy them into the Devs/Printers directory on your Workbench disk. There are over two dozen printer drivers from which you can choose.

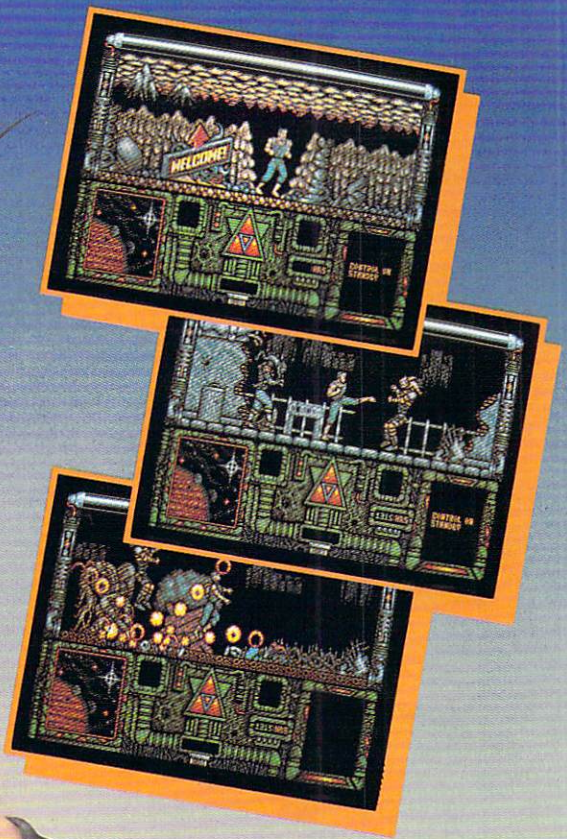
Another Extras 1.3 directory, Fonts, offers three additional typefaces—Courier, Helvetica, and Times—in several different sizes that you can use with applications like Notepad. If you decide you want one of these fonts, copy its entire directory and its corresponding .FONT file into the Font directory on your Workbench disk. (To get back some of the Workbench ►

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space that these fonts consume, you can delete any of the standard Workbench fonts that you don't use.)

Down an Obscure Path...

So far this tour has been fairly routine, but now let's take a turn into esoterica: the PCUtil directory. This directory is the home of three tools—PCFormat, PCCopy, and ToPCCopy—that let you copy files between Amiga 3.5-inch disks and IBM PC 360K 5.25-inch disks. There is also a short "Read Me" file that explains the basics of these utilities.

These tools are useful only if you have an Amiga 1020 5.25-inch disk drive, or a third-party equivalent, and a need to read IBM-PC files. If you have a Bridgeboard and run a few MS-DOS applications, or if you transfer spreadsheet or word-processing files between a PC and your Amiga, these tools could be just the ticket. Most of us, however, probably don't need them.

If you decide to use these tools, be sure to obey a few simple rules. First, turn on the 5.25-inch drive before you turn on your Amiga, so that when the Amiga boots it will be aware of the drive.

Next, *don't* mount the 5.25-inch drive. That advice runs contrary to most of what we've told you about disk drives in the past; AmigaDOS usually cannot work with a drive unless you first mount it. But because AmigaDOS must treat this 5.25-inch drive as a PC drive, it cannot view it as a standard, mounted AmigaDOS drive.

Finally, remember that PC disks, like Amiga disks, aren't ready for action until you format them. You can either format your PC disks on a PC or use the PCFormat utility.

If you use PCFormat, put a disk in the drive before you start, or you might be sorry. PCFormat is a temperamental tool that has taken us to visit the Guru more than once. When you bring it up it will let you choose the DOS version and disk format for your PC disk. Unfortunately, while most of the PC world is using DOS 3.0 or higher and 1.2MB floppies, PCFormat limits you to DOS versions 1.0 or 2.0, and to either 160K (one side, eight sectors per track) or 360K (two sides, nine sectors per track) disks. Still, if you stick with the defaults, you'll get 360K disks that most PCs can read.

Once you've got a formatted PC disk, you can copy files between it and your Amiga disks with the PCCopy and ToPCCopy tools. The two tools are basically the same, except that PCCopy copies from a PC disk to an Amiga disk, while ToPCCopy goes the other way.

Tooling Along

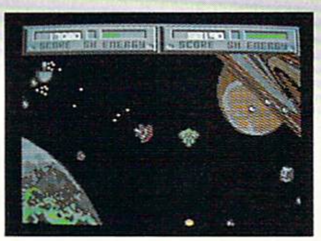
Our final stop on the Extras tour is the Tools directory. This may conjure images of opening a toolbox full of useful gadgets, but it's more like opening Christmas presents: You find gold every now and then, but most of what you find will end up collecting dust in the back of your closet.

On the useful side, we have MEMACS and KeyToy2000. MEMACS is an extremely powerful, albeit hard to learn, text editor that will do just about anything. (For more information, watch for our artilce on MEMACS, scheduled to appear in a future issue of *AmigaWorld*.)

KeyToy2000 is a little program that you won't need often, but you'll be glad you have it when you do need it. It displays a picture of the keyboard and shows the character that each key pro- ►

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duces. Press the Shift key, and you see the characters that the shifted version of each key produces. Ditto for the ALT key. This tool is just the ticket when you're looking for that hard-to-find copyright symbol (ALT e), beta (ALT s), or other esoteric character.

From here on, however, we're in the scrap heap. For example, take Palette. Please. Palette lets you change the colors of any screen. You can already do that with Preferences, but only for the Workbench screen. Of course, most Amiga applications use windows, not screens, so Palette is largely redundant with Preferences.

Then there's FED. FED let's you create and edit fonts. It's a neat tool, and we had a nice time playing with it, but let's face it, how many of us really need or even want new fonts for Workbench? Where we might want fonts is in a desktop-publishing program, but most of those already come with an ample supply.

And, of course, there's the icon-editing utilities, IconEd and IconMerge. IconEd lets you change an icon's appearance, while IconMerge lets you split or merge icons. Again, IconEd can be fun, but how often do you need it? As for IconMerge, well, we like icons that change their appearance when you click on them as much as anyone—who doesn't get a kick out of seeing the Trashcan lid open—but we don't get the urge to change those icons very often. Developers may like these tools, but they aren't very important for most of us.

FreeMap is another tool in that same class. It shows you how much of your chip memory is free, and how much is in use. This might be nice to know when you're trying to run a graphics program that needs a lot of chip memory, but in the end either that program runs or it doesn't. If it does run, who cares how much chip memory you have? It if doesn't run, you know you have to close some other tools to free up some memory, so FreeMap doesn't really help. Now, if FreeMap would tell you how much chip memory each process is using, that would be handy, because then you would know which ones to abort to gain back the most chip memory. As it is, however, FreeMap is largely a curiosity.

Finally, here's our candidate for the dumbest tool: PerfMon. PerfMon monitors the system's performance, showing you the degree of CPU and memory utilization. That information may sound useful, but what are you really going to do with it? If you have work to do, you have to do it, regardless of whether your Amiga is running at half capacity or full bore. Further, PerfMon presents its CPU information as a difficult-to-read graph. Why it doesn't have a nice simple 0–100% scale, or maybe a speedometer, is beyond us.

END OF THE ROAD

We've been covering 1.3 for nearly a year, and it's time to move on to other aspects of the Amiga. Until next time, take a few minutes to experiment with the contents of the Extras disk, and see how your assessment matches up with ours. Let us know if you want; we're always willing to be persuaded that we're wrong. Happy touring! ■

Mark L. Van Name and Bill Catchings are contributing editors to AmigaWorld. *Write to them at 10024 Sycamore Rd., Durham, NC 27703.*

THE GAME PRESERVE

Burn Rubber

Screeeeeeeeeeech. A sleek red Ferrari with the license plate "BG" streaks off into the horizon.

By B.G. Hunter

IN A SEARCH for the ultimate racing game, I've driven almost every kind of vehicle over almost every type of terrain, all from the comfort of my Barcolounger. I'm not too demanding; the arcade game Pole Position, with its simple controls and fast pace, has gobbled more than its share of my quarters. None of the ten Amiga games I tried, however, gave me that total racing thrill.

ON THE COURSE

Take, for instance, **Ferrari Formula One** ($49.95, Electronic Arts). Like many recent computer games, it's too complex. In some respects Ferrari Formula One is a tour de force; its graphics are stunning, and it doesn't miss a detail. Want to see what's behind you? Check your dual side-view mirrors. Unfortunately, those same details can overwhelm you. Before you even start racing, you must pick your tires, adjust the suspension, and tune the engine and gear ratio.

I might enjoy these items if the driving were more fun, but it's not. Steering with the mouse is bad enough, but then you have to shift through six gears. While you steer and shift, you also have to monitor gauges for fuel, oil pressure, RPM, turbo-boost level, and your cooling system, as well as keep an eye on how your tires are wearing.

I always finish in last place.

On the other end of the spectrum, **Formula 1 Grand Prix** ($29.95, StarSoft Development Laboratories) does not pay enough attention to details. Its racing is straightforward, if unexceptional. You still have to shift through six gears, but here you really have to get it right; over-rev the engine and your car explodes. Resume racing, and you begin in the gear ►



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you were using before the explosion. Starting in sixth gear is no fun.

Far worse, however, was the penalty for getting a high score: the game hung. To be fair, it probably hung because I didn't use a high-score disk, but it never warned me.

The documentation, like that of so many other Amiga games, told me practically nothing. I'm being generous, actually. Its "manual" is one double-sided, photocopied page. Only one-quarter of the page is actually documentation and includes such deathless hints as "avoid collisions and overtake as many cars as possible." Wish I'd thought of that. Worse, instead of springing for an extra manual page, StarSoft added an insert that, like an overgrown matchbook cover, invites you to become rich by writing for them. If this game is making anybody rich, I'm in the wrong business.

Perhaps the most enjoyable of these Formula One racing games is **Grid Start** ($24.95, Anco). It has decent graphics and enough options to keep you interested. As in all of these games, you can race once or run a multiple-course season. I didn't win often, but the ability to choose different skill levels at least made me competitive. Unfortunately, you can't save your high scores to disk.

Like the others, Grid Start makes you wade through six gears. I ended up in fourth gear most of the time because downshifting was so hard: you have to press the joystick's button while at the same time pulling back on the stick. Miss the button and you've just hit the brakes, so you've got to be careful.

A faithful reproduction of the arcade version, **Out Run** ($49.95, Sega) brings a thankfully-simple two gears to a less realistic drive. Instead of a race track, you speed through a succession of highway landscapes as you try to beat the clock. Geography takes a back seat to speed, as Holland borders Death Valley. (You also can't save your high scores to disk. What's wrong with these people?) Along the way you have to weave through a series of racing cars, trucks, VW Bugs, and other vehicles—all the while running at as close to full throttle as you can manage. Hit a tree or another obstacle and you, and your companion, go flying out of the car.

That's right. You, the male driver, get a blond female friend, as well as your choice of three different "hot music" selections from your car stereo. Is this 1950, or what? Let's have some options here; my daughter may someday want to drive a race car. This game is obviously intended for the under-16 set, and I also enjoyed it, so I don't see why she shouldn't as well.

Off Road

If you feel like getting a little closer to the wind, step out of the car and onto a dirt bike in **Kikstart 2** ($19.99, Mastertronic). As you speed, jump, and wheelie your way to the finish line on the scrolling top of the screen, your opponent (Amiga or human) races you on the screen's bottom half. You race on a series of five courses that you can pick from a selection of 25. All have good graphics, as well as such obstacles as ramps, picnic tables, and red British telephone booths.

My main frustration with Kikstart 2 is that L.G. Hunter, my four-year-old son, is better than I am. While plagued with a case of chicken pox, he got all too good at it. I eventually topped his score, but I may never live down the defeats I suffered along the way.

Another off-beat game that I enjoyed a great deal is **4×4 Off-road Racing** ($39.95, Epyx). Maybe it's because I drive a pickup, but I had a great time trucking through Baja, Death Valley, and muddy Georgia.

You start by selecting a course and one of four skill levels. Then you pick a truck. You must balance such factors as weight, cargo capacity, gas mileage, and durability. Then you have to get some tires, gas up, and buy tools, spare parts, and some extra gas. All ►

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right, so I griped about too many details earlier. That might bug me here, too, except that the driving is so much fun. There are no gears; it's just you, the road, and a succession of obstacles and other trucks that you have to avoid. Every time you hit something, you damage your truck, and eventually it'll break down. You can fix it, but that takes valuable time. You also have to watch your fuel. The faster you travel, the more gas you consume.

While I enjoyed 4 × 4 and Kikstart, I am still seeking the ultimate racing game. Fortunately, so too are some of the game companies. Accolade, for example, just released **The Duel: Test Drive II**. I was not particularly fond of the original, but the new one promises a lot of extra features, such as new cars, optional auto-shifting, a variety of scenery, and better crashes. Maybe it will be the end of the road.

Although not the type to be caged in an office, B. G. Hunter does skulk in occasionally to pick up his mail. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

G A M E R E V I E W S

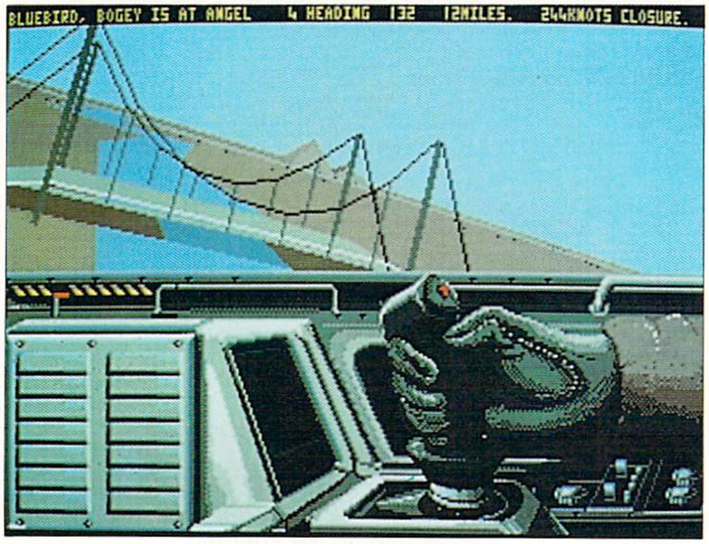
Falcon

By Denny Atkin

A MiG-21 ON my tail, I bank hard right and kick in full afterburner. An explosion shakes the F-16. Warning klaxons sound as the powerless plane dives. I've destroyed $25 million worth of military hardware, but thanks to Spectrum Holobyte I can try again.

One of the most realistic simulations available, Falcon lets you pilot an F-16 Fighting Falcon jet fighter on air-to-air and air-to-ground missions. Don't expect to open the package and immediately soar away. You'll need to read the excellent 134-page manual to survive.

You can choose your rank and mission. Ranks range from First Lieutenant, where you can't crash and the enemy won't shoot at you, to Colonel, where surface-to-air missiles (SAMs) are attracted to you in swarms, and even putting your landing gear down at too high a speed can severely damage your aircraft. Twelve missions are available, from the Milk Run, a practice attack on target buildings in friendly territory, to the Grand Slam, in which you must shoot down four enemy MiGs.



Dodge the bogies and the bridges.

After selecting weapons, you take to the air. Falcon presents you with a very realistic cockpit—you must look to the side to view many of the instruments, just as in a real F-16. Graphics, both in- and outside of the aircraft, are excellent.

You won't have much opportunity to enjoy the view; Falcon really shines in the dogfights. Unlike many computer flight simulations where enemy planes defy the laws of physics and gravity, the MiGs in Falcon attack you using realistic maneuvers, such as the variable scissors or low G yo-yo.

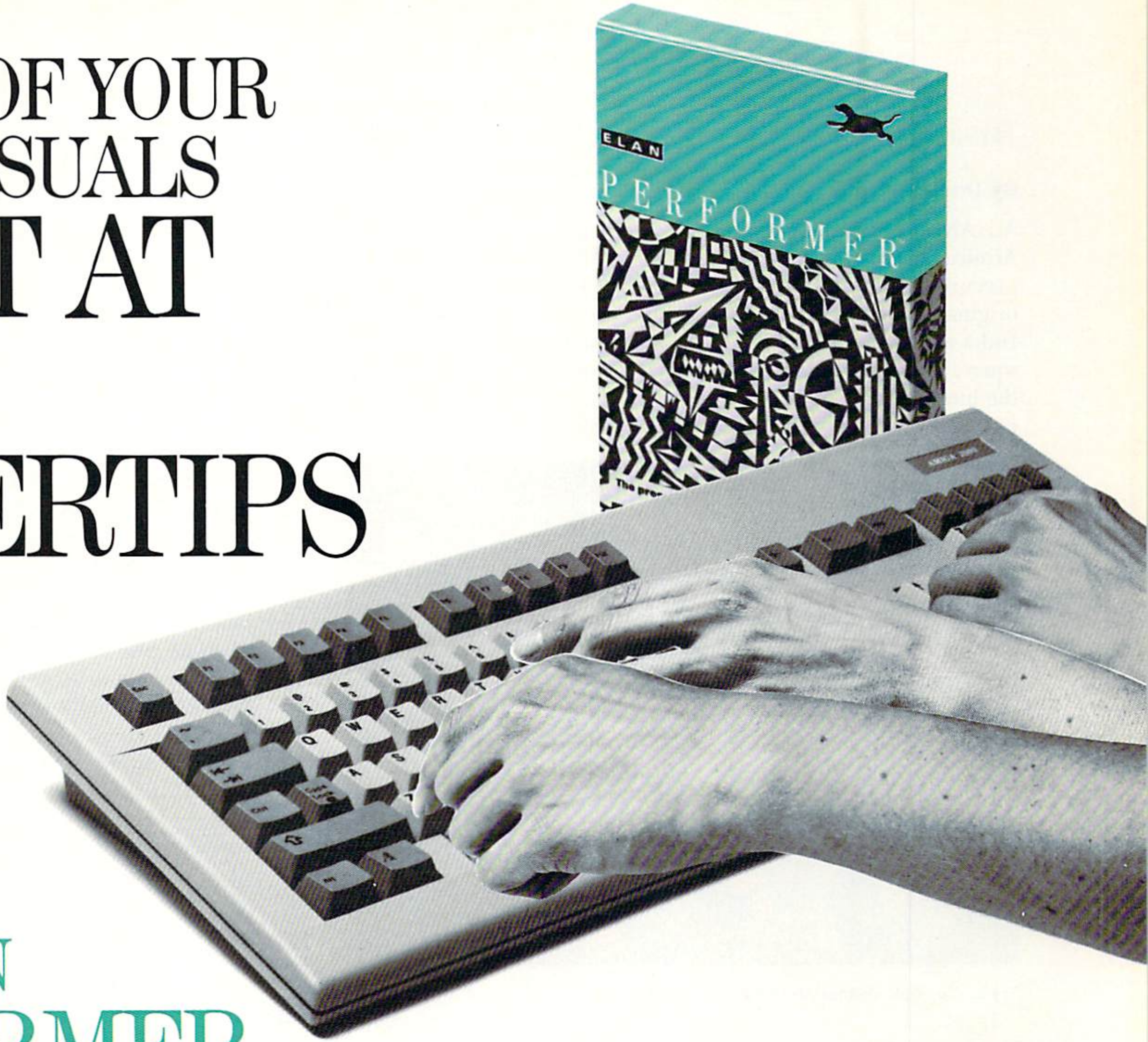
While Falcon will run on a 512K Amiga, it offers a number of bonuses for larger systems, including a head-to-head mode, where you can fly against another player using Falcon on an Amiga, Macintosh, or Atari ST via a modem or special cable.

My only complaint is that whether you use the mouse, keyboard, or joystick, Falcon is very hard to control. None of the controls allow you to change attitude and direction at the same time, preventing you from diving or climbing while turning. Also, the game is not compatible with accelerator boards.

While the casual game player may find Falcon overly complex and perhaps a bit too realistic, the program is a flight simulator lover's dream.

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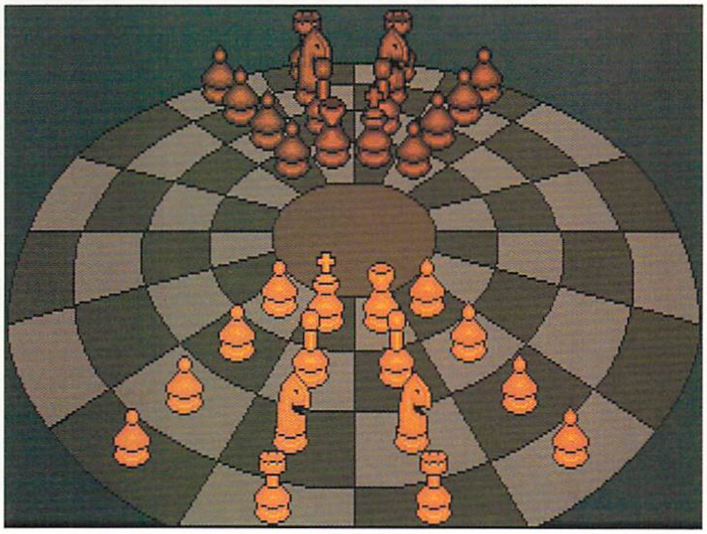
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94131

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Distant Armies

By Dodson Yaple

A HANDS-ON history, Distant Armies offers you ten different precursors of chess—from the original game of sixth-century India to a twelve-piece, 36-square version designed to fit the limited scope of early computers. On-screen illuminated manuscripts annotate each game, describing its rules and placing it in historical perspective. To learn the legal moves for unfamiliar pieces, press the Help key and click on the piece in question, or select Show Moves from the menu.



Try a round of Byzantine chess.

Unfortunately, the rules occasionally confuse vertical and diagonal movement, but the accompanying diagrams are always correct. To ease into competition, you can select your difficulty level.

Playing the individual games is surprisingly like playing conventional chess. The games differ primarily in the sort of contest they tend to produce. The early Indian and Persian varieties, for example, encourage quiet, positional play, largely because the stronger pieces cannot get into action until the middle or end of the game. Medieval chess is a faster game, allowing privileged moves intended to enable quicker openings. Later variations like Courier and Decimal employ larger boards and high-powered killer pieces that favor a wild slash-and-burn style. In Burmese chess, you decide the initial deployment of your pieces. While you play Byzantine chess on a round board, you play Los Alamos chess without bishops, on a six-by-six layout. There's even Chinese chess with a river running across the center of the board.

Distant Armies is not copy-protected, but you will have trouble installing it on a hard disk. The sequence of commands listed in the manual contains syntactical and typographical errors.

Though it's unlikely to be your workhorse chess program, Distant Armies is a carefully wrought coffee-table-book of a product that historically-inclined players will delight in browsing.

Distant Armies
Eagle Tree Software
PO Box 164
Hopewell, VA 23860
804/452-0623
$44.95
No special requirements.

The Universal Military Simulator

By Patrick Quaid

THE UNIVERSAL Military Simulator (UMS) from Rainbird Software might be the best looking war game available. The battlefield is a three-dimensional wire grid viewed from the side to show elevation, with white and black flags, which symbolize the various army units, planted at its vertices.

Unfortunately, the designers of UMS took a disappointingly simplistic view of combat. For example, there are only two terrain types: woods and not woods. There is only one fundamental unit type, which can fire ranged weapons to approximate artillery or travel quickly to simulate cavalry. A unit's relative force is determined by a single number, so an effective artillery unit is necessarily a tough close combat unit. Although the game supports concepts like morale and efficiency, it does not consider an army's command structure, which makes ancient combats unrealistic. Meanwhile, the lack of any true air units and an understanding of the rock/scissors/paper interrelationships of modern combat units make contemporary scenarios almost impossible to simulate.

Faced with this lack of realism, you must consider UMS more of a strategy game than a war game. The battles are fun to play and to watch, and the computer is a decent opponent if it's attacking. During the command phase you can issue all the orders, or just give the critical ones and let the computer oversee the rest based on your guidelines. During the combat phase you can direct your side's artillery fire, or again allow the computer to do it. ►

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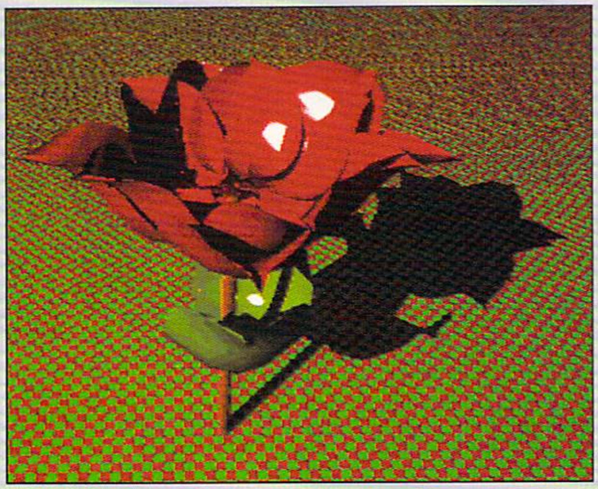
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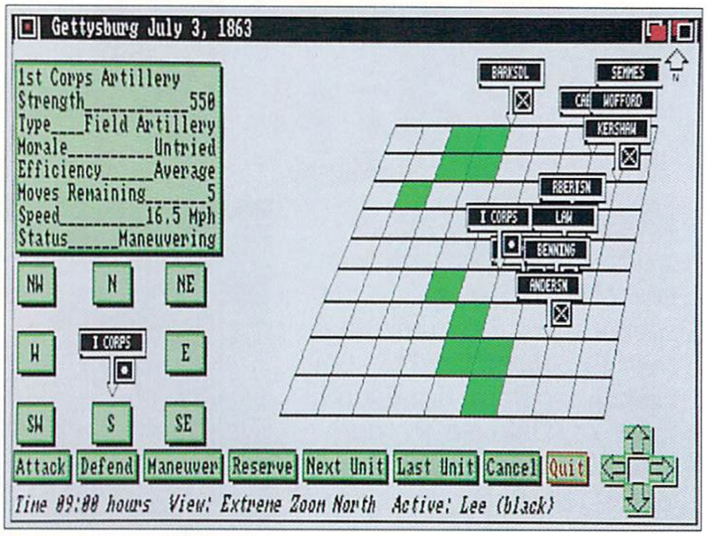
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The combat looks impressive, with thick black arrows boldly announcing each unit's proposed path toward the enemy and the digitized din of war punctuating the encounters. Attacks designed by the computer are particularly stirring, full of the sweep and symmetry you expect from these epic battles. Who cares if it sends artillery units out in front.

UMS has a facility for creating new battles, but provides virtually no useful documentation for doing so. You can use the five included scenarios as a rough guide, but several vitally important issues will remain guesswork.



Plan your advance.

The Universal Military Simulator is far from universal, not very military, and for that matter not much of a simulator. As long as you don't expect much realism, you might enjoy it.

The Universal Military Simulator
Rainbird Software
distributed by Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025
415/322-0900
$49.95
No special requirements.

Tower Toppler

By Neil Randall

IN TOWER TOPPLER you climb and destroy a series of increasingly dangerous towers. Each tower is ringed by a series of exterior platforms, many of which terminate in elevators. Windows lead through the tower to other platforms. All the windows and platforms interact logically. Entering the top window destroys a tower. As you cruise to the next mission in your sub, you can earn bonus points and extra climbing time by catching fish, in an unsatisfying arcade shoot.

The evil forces, of course, try to stop you. You can destroy block barricades and some cannonballs with your gun, but you must avoid the eyes, robots, and mutant mol-

ecules. If they touch you, they knock you to a lower platform or into the poisonous sea.

You begin with three lives. If you fall into the sea or use up the time allotted to reach the top of the tower, you die. For every 5000 points you earn a new life. Lose all your lives, and you must restart at the first tower, which is annoying once you've reached the higher levels. Even more annoying is the bug that causes obstacles to meet and stick together, forcing you to fall into the sea.

Tower Toppler is graphically excellent, and is both challenging and enjoyable to play. The towers range from the fairly easy (Tower of Eyes) to the near impossible (Trap of Tricks). A good, solid arcade game, Tower Toppler is for adults and children alike.

Tower Toppler
U.S. Gold
distributed by Epyx
PO Box 8020
600 Galveston Drive
Redwood City, CA 94063
415/368-3200
$49.95
No special requirements.

Crash Garrett

By Dodson Yaple

A HARD-BOILED 1930's aviator, Crash Garrett finds himself on the trail of Nazis who are plotting to establish a master-race breeding farm in the U.S. You play Garrett's mysterious inner voice, which has accounted for much of the hero's past success. The game unfolds as a series of quasi-animated comic book-style sequences, during which you are a spectator with no control over the course of the action. Only when Garrett reaches an impasse does he solicit your counsel; you decide what to do, and the next scene commences.

Crash Garrett's visual effects are the best part of an otherwise unexceptional product. While the cameos of the on-stage characters and their props are not animated, their balletic motion about the screen combines with a barrage of fades, wipes, flips, and ►



What a group of faces to wake up to.

dissolves to convey a sense of action, even character.

Aside from the appropriately jazzy title music, ineffective sound dilutes the game's impact. Crash Garrett's audio comprises little more than half-hearted beeps and gunshots. Dialogue through the Amiga speech device works to limited advantage.

Play is frustrating with the parser the game's weakest aspect. Many plot lines culminate abruptly in peculiarly undramatic situations, and the scenario includes odd endings in which neither do you die nor do you achieve any of the game's objectives.

Crash Garrett is refreshingly unprotected, but its inclination to make life easier for you stops there. It does not multitask and cannot be made to run from the RAM disk. Most of its documentation (and some of the game) is written in French. You can save only one position at a time, and there is no provision for pausing your game or starting a new one, but I'm not sure why you would want to.

Crash Garrett
Infogames
distributed by
Terrific Software
544 Second St.
San Francisco, CA 94107
415/957-0886
$39.95
No special requirements.

Reach for the Stars

By Neil Randall

AS REACH FOR the Stars' subtitle explains, your goal is "The Conquest of the Galaxy." You can start in possession of a home planet or in space looking for a planet. Once established, you must expand your realm into the galaxy. The more planets you possess, the more Resource Points you produce, hence the more warships, colonists, and planetary defenses you can produce. If you don't expand, other would-be colonists (up to four computer or human players) will walk all over you.

You use Resource Points to construct ships, which you group in task forces to colonize or conquer other planets. You can spend Resource Points on increased navigational and industrial technology, as well. Increasing the former widens the radius the ships can move in one turn, while increasing the latter raises the number of Resource Points a planet can produce.

If you desire, a host of options will complicate your mission. Novas make stars become unstable, forcing you to evacuate their planets. Natural disasters can strike. Xenophobes (viruses) force planets into quarantine, while solar debris makes navigation difficult.

The trick to the game is to get out and explore early, constantly building up your home planet and any other planets you control. Because there are four types of planets (Primary through Hostile), five star classes, and several ways to develop your holdings, this task is much more difficult than it sounds. I recommend this gem with absolutely no hesitation.

Reach for the Stars
Strategic Studies Group
distributed by Electronic Arts
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$45
No special requirements. ■

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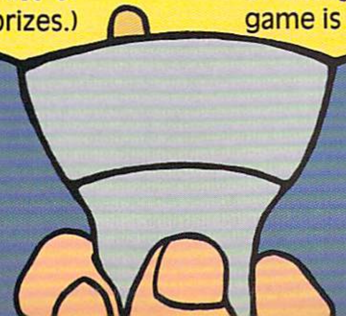
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SO WHAT DO YOU NEED TO DO? Get ready to match wits again with the *AmigaWorld* staff. Last year we took you on a grueling cross-country treasure hunt to San Francisco. This year it's going to be even trickier—and more dangerous! **Foul play** is involved and you're going to have to solve a complex **mystery** layered with lies, deception, unreliable witnesses, and assorted red herrings.

On top of that, our "Sweepstakes Drawing" is no ordinary pull-the-tickets-out-of-the-box affair. Not by a long shot! We guarantee you'll be on the edge of your seats if you're one of our Contest finalists. . .but that's part of the mystery, and we'll say no more about it until later. So put on your deerstalker and find an able Dr. Watson to assist you. **Part 1 of The 1989 *AmigaWorld* Mystery Sweepstakes begins next month in the July issue of *AmigaWorld!*** The game is on!



Continued from p. 18

No matter how good an encoder is, however, it cannot transform overdriven video signals into broadcast quality. If you record the Workbench screen, for example, the white title bar appears to bleed and tear. This is not the fault of your encoder—the white level is simply too high. Although low color values may appear dull in RGB, it is best to avoid values above 12 or 13.

OUT OF SYNC?

As impressive as it is, the Magni 4004 is not without problems.

Two manuals are supplied with the unit; one covers the hardware and the other deals with software. Although the coverage in each is fairly comprehensive, locating information is not easy. Combining the two would make things easier, because, for example, the hardware manual does not mention the DIP-switch setting for the software. The text and presentation are reminiscent of a technical service manual. Video engineers will comprehend the buzz words and the discussions of sync, subcarrier, and oscillators, but most of us would rather see plain-English explanations of the system's creative aspects.

The DIP switches are difficult to use, especially if your Amiga is situated with its rear to a wall. Even if your machine is rack mounted, you will tire of peering into the tiny space and hoping that you are flipping the correct switch.

I find it curious that the unit was designed to tie up both the video slot and an IBM slot, especially with all the new hardware coming along for the video slot. My biggest complaint, though, is the 4004's price. Including the 4010 remote control, the system is more than double the price of Digital Creations' SuperGen. Is it twice as good? I think not.

IN THE MONEY

Clearly, the Magni is aimed at video professionals who won't balk at spending a couple thousand dollars to sync an Amiga with the rest of their system. NTSC, however, is not the best way to get a clean videographics signal. Most professionals I have worked with run graphics output directly into a video switcher from a single encoder/sync generator. Would they prefer a stand-alone encoder with S-VHS, ED-BETA, MII, or Betacam inputs and outputs, and PRE-COMBING and POST-COMBING for better-than-NTSC images? Although Magni has, at press time, announced the addition of S-VHS input and output, for the kind of dollars Magni is asking for this genlock I expected more.

Still, the quality of this unit sends a clear signal to the broadcast community: The Amiga can produce rock-steady video output—even for big-shot broadcasters with shrinking budgets.

4004 Genlockable Video Graphics Encoder
Magni Systems Inc.
9500 S.W. Gemini Dr.
Beaverton, OR 97005
503/626-8400
800/237-5964
$1695
$1995 with 4010 remote-control unit
No special requirements.

PROFESSIONAL DRAW

The first of its kind is not the last word.

By Chris Dickman

WHILE THE AMIGA market has long been blessed with several quality bitmap-graphics programs, it's had a dearth of object-oriented programs—those that deal with images not as collections of bits but as mathematical descriptions. As the first program of this type available on the Amiga, Professional Draw (which is less than half the price of similar Macintosh and IBM-PC software) is definitely overdue. With it, you can access the capabilities of PostScript laser printers and imagesetters to output crisply at high resolution, dump to color PostScript thermal printers, and color separate into process film on Linotronic imagesetters, ready for the offset printer.

Gold Disk, the program's creator, is best known for Professional Page, long the most powerful desktop-publishing program for the Amiga. The two programs have many menus and tool icons in common, so Professional Page users will feel at home using Draw. Because version 1.2 of Professional Page is said to be able to import Draw files, the two make a natural pair.

LONG AND WINDING ROAD

With Professional Draw, as with all serious draw programs, you create graphics composed of lines and Bezier curves. If you opt for the Freehand tool, the program will convert the results to Bezier curves; with the Pen tool you directly create one curve or line at a time. Those familiar with bitmap-graphics programs will feel more comfortable with the former, while the latter provides more control over the creation of each line segment. Professional Draw's lack of the usual provision to let you specify how closely the Freehand tool converts your movements to curves (the result is often an unwieldy number of curves) exaggerates the difference between the tools.

Each curve has anchor points at either end. When you click on these points, the program displays the attached control points. You can drag the anchors to alter the length or angle of a curve. Drawings are thus made up of collections of curves, called paths, which you can close and fill.

The key to productivity with a draw program is a flexible approach to working with paths. Unfortunately, Professional Draw is weak in this regard. There is, for example, no way to delete points, individual curves, or lines from a path. And you cannot select and move just one curve, but are forced to move the entire path. Even worse, you are not able to select multiple anchor points at once and move them as a group. While most draw programs change the color or shape of anchor points when you select them, Professional Draw does not, which makes it hard to know what you are editing.

This problem is especially nasty at Workbench resolution, so for production work plan on using either a long-persistence or high-resolution monitor that can drive Professional Draw at 1008 × 800 pixels. The problem of clarity is exacerbated by a known bug that causes anchor points to display in white when you deselect a path, thus making it look like

a bunch of unconnected lines. How the program could have been allowed to ship in this condition is baffling.

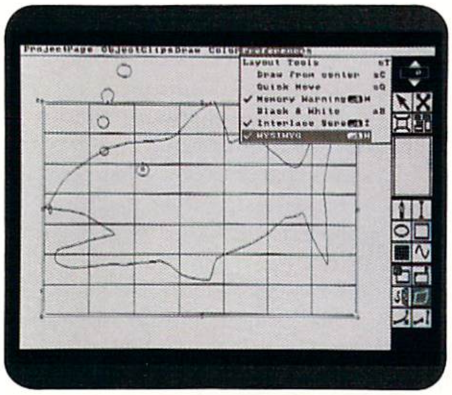
FREE TRADE

Professional Draw can import IFF bitmap files of any resolution containing any number of colors. On screen, you can combine them with Bezier curve objects. Professional Draw displays color bitmaps in four shades of gray but will output them in full hue to color bitmap printers, in 16 gray shades to PostScript printers, and, most interestingly, color separate them on PostScript imagesetters.

While you may be tempted to trace over imported bitmapped images, using Professional Draw's Freehand tool makes the process tricky. It creates more anchor points than necessary as you draw. Also, the screen does not scroll as you use the Freehand implement, making it awkward to trace when you've zoomed in to view just a part of the template. A feature to let you continue an existing path by clicking on an anchor point and drawing, and one to automatically trace bitmaps (both are provided on most other draw programs), would be helpful additions.

BEYOND REACH

Amiga software that fully taps the power of PostScript printers has yet to be written. Professional Draw really stumbles in its approach to handling type. For starters, only two faces (clones of Times Roman and Univers) are included. There is no provision for using resident or downloadable PostScript fonts, thus shutting Professional Draw users out of the rapidly expanding library of high-quality PostScript typefaces. Worse, the included screen fonts are rendered so poorly as outlines on the screen that they are nearly illegible. Instead of being drawn with a few well-chosen lines and curves, they consist of a ludicrous swarm of anchor points; editing the letters is virtually impossible. The manual says that the program "is not a text layout program—that's Professional Page's forte." I say that's a lame excuse for unacceptable text handling. You can't even make type bold, underlined, or italic. Shame!



Professional Draw displays in four gray shades.

Professional Draw imposes some severe color restrictions, which are especially painful given the Amiga's capabilities. You can create graphics in only 16 colors, nine of which are shades of gray and only seven of which are user-definable. To define colors, you use RGB sliders to mix any of the Amiga's available 4096. Gold Disk claims you can share Draw palettes with Professional Page 1.2. As you create screen colors, the equivalent YMC (yellow, magenta, cyan) values are displayed. You can also enter these values directly, and Professional Draw will generate the sum when separating the graphic. Lacking is the ability to define solid colors in terms of the Pantone Matching System (PMS), which is popular in the graphic-arts industry and provided by many draw programs.

GETTING OUT

Professional Draw's ability to create color separations is a feature normally offered only by high-end draw programs. You get a similar amount of control over separations as you do with Professional Page: You can specify the angle and density in lines per inch of the three process colors' halftones plus black. A file can be output directly to a Linotronic or printed to disk in EPS (Encapsulated PostScript) format. It is then ready for color separating with a PostScript imagesetter. You could also output this EPS file in one piece to a QMS ColorScript thermal PostScript printer. Lastly, you can output to any Preferences-supported color printer, but printing detailed draw ►

graphics on a lo-res bitmap printer doesn't make much sense.

For many us, the world of high-resolution color output and separation is new and awe inspiring. Sadly, Professional Draw's documentation is rather drab. It suffers from a lack of graphic examples. The 20-page tutorial isn't much help, either. It should be much more comprehensive—particularly because Professional Draw is the program through which many Amiga users will be first exposed to using Bezier curves. The so-called 'context-sensitive help'—a few lines of general information that depends on which tool you've selected—is embarrassing. There is no on-line help when working with requester windows, where it's most needed.

What It's Not

I could go on, listing features present in Macintosh and PC draw programs but lacking in Professional Draw (such as graduated and PostScript fills, an undo command, abilities to import EPS files and to wrap text along a definable path, clipping abilities for masking and transparency effects, and more) but perhaps this is an unkind comparison. Maybe I should just take a deep breath and say that the Amiga community still does not have an object-oriented illustration program of power and depth. What we do have is a companion package to Professional Page that will let Pro Page owners create simple logos and graphics to incorporate with their version 1.2 publications, and output to laser printers and imagesetters at high resolution.

You might think of Professional Draw as an inexpensive introduction to draw software; something to whet your appetite for the real thing. It does provide a way for novices to get their feet wet with color separations. Until Professional Draw's bugs, text-handling abilities, and feature set are cleaned up, however, the title of this program will remain a misnomer.

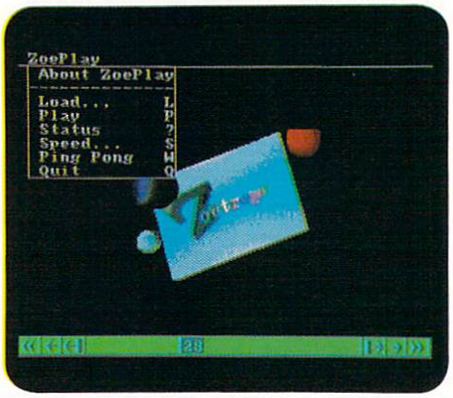
Professional Draw
Gold Disk
PO Box 789
Streetsville
Mississauga, Ont.
Canada L5M 2C2
416/828-0913
$199.95
One megabyte required.

Zoetrope

Fly high in lo-res.

By Sheldon Leemon

ZOETROPE COMBINES A number of the most powerful features found in stand-alone paint, image-processing, video-titling, and 3-D effects programs, and adds some tricks of its own, too. The package, from Antic Software, offers a wide assortment of drawing and 2-D animation tools that help you create cell animations frame-by-frame or touch up existing animations. Other Zoetrope implements can move and rotate two-dimensional bitmap images, perform 3-D effects on flat images, and provide scene transitions. Despite its power, however, Zoetrope has a fatal flaw. Like Cyber Paint, Antic's Atari ST program from which it evolved, Zoetrope operates only in low-resolution mode—320 × 200 pixels



ZoePlay is Zoetrope's animation program.

with 32 colors. While this is the only choice on the ST, it is arguably the Amiga's least-useful graphics mode.

More Than a Brushful

Zoetrope's paint program is full featured. In it, you will find all of the usual drawing instruments, including freehand, dotted-freehand, and line tools, and others for drawing geometric shapes. You can use any of these with a variety of brush sizes and shapes or apply connected or concentric modes to these tools to create rays, connected lines, or a series of geometric shapes radiating from a center point. A zoom feature allows you to magnify portions of the screen for detailed work.

The paint program also lets you clip rectangular sections from pictures to use as brushes. You can manipulate these brushes in a variety of ways by rotating or stretching them on any axis, for instance, or by recoloring them to match the current palette. You can paste brushes beneath the current picture or on top of it.

Step In Paint

What makes Zoetrope different from other paint programs is that it does not confine you to working with one or two pictures at a time. A number of tools are capable of altering not just one picture in a sequence, but a range of frames—or the entire animation—at once. One such set of tools, the APM (Antic Pixel Mover), allows you to move, size, or rotate a clip or an entire picture over a sequence of frames (you are limited to moving one clip at a time in any sequence). Let's say that you have painted a sign board that reads "Presenting" and have copied it to the clip buffer. With the APM F/X menu, you can specify a starting position and rotation, plus an ending position and rotation. Then, you can have APM draw a series of twenty frames, for example, changing the orientation of the sign in each frame slightly, so that when the sequence is played, the sign appears to spin. Drawing all of the pictures can take a long time, and a mistake is not easily undone; thankfully, a preview mode gives you a wireframe representation of the effect. You can apply APM effects not only to clips, but also to an existing sequence of entire scenes.

Pixel effects alter the composition of a frame or series of frames in much the same way that image-processing software does. Among these are Defocus and Antialias, both of which soften the outlines of objects. The Unres option "pixelizes" the picture to make it look like a mosaic. Outline draws a border around each block of color, while Edge-in outlines selected color blocks. The most unique of the Pixel effects are Ripple and Buzz, which use sine and sawtooth waves (respectively) to distort a picture, so you can "bend" objects in a curved path. The rest of the Pixel effects provide functions

similar to those found in video-titling packages: With Tile you can repeat a pattern over the entire screen, while Shatter, Wipe, and Venetian are transition effects for introducing and withdrawing scenes.

Some of Zoetrope's color effects also work similarly to image-processing software. For example, based on various formulas, you can invert all the colors in your palette, change them to shades of gray, or convert the picture to black and white. You can tint a whole scene with red, blue, or green, and change every occurence of one color or multiple colors to any other hue. The Color Effects menu also provides for versatile color-cycling effects, and for fading or intensifying color over a series of frames.

CELL MATES

Several options facilitate the sketching of cel animations. The Blueing feature displays a blue outline of a figure drawn in the previous frame so that you can trace it, make incremental changes, and then remove the guide lines. The History function outlines the previous frame in one color and subsequent frame in another, allowing you to create smooth transitions between the two. The Get Changes function clips only new material added to a frame.

Zoetrope's load and save functions let you work with file segments, and thus manipulate animations even with limited memory. For example, you can edit just the middle 30 frames of an animation. These options also allow you to merge animation files with other sequences in a number of interesting ways: You can load an animation "under" or "over" one already in memory, or use the former as a mask. Using these options, you can then move multiple clips simultaneously in one animation. Although Zoetrope saves its animations in RIFF format (also used by A-Squared's Live! digitizer), it comes with utilities that let you convert Aegis Animator, Cyber Paint, and Anim-format files to RIFF, and vice versa. These programs can also convert larger format files to Zoetrope's 320 × 200.

PAINTING YOURSELF INTO A CORNER

Zoetrope's manual contains some of the longest and most tedious tutorials I have seen, and the user interface is somewhat clumsy. The program employs several modes, each of which limits your actions. Often, you must switch between modes to perform an operation. One action can produce diverse results depending on the mode you are in—even the keyboard equivalents have dissimilar meanings in different modes.

By far the most serious problem, though, is Zoetrope's exclusive use of the low-resolution graphics mode. Because of this restriction, Zoetrope's animations appear crude compared to those produced with other Amiga programs. Lack of support for interlaced or overscan displays makes this program a poor choice for video applications, and because it does not support HAM or hi-res modes, Zoetrope disqualifies itself for many professional graphics applications. While Cyber Paint stretched the graphics capabilities of the Atari ST, Zoetrope does little to address the Amiga's unique abilities. If it had, it might have set a new ►

Circle 168 on Reader Service card.

standard for 2-D animation software on the Amiga.

Zoetrope
Antic Software
544 Second Street
San Francisco, CA 94107
415/957-0886
800/234-7001
$139.95
One megabyte required.

X-CAD

No power to the people.

By Stephen Ellerin

X-CAD, from Taurus Software of Great Britian, is potentially the most powerful Computer-Aided Design (CAD) program available for the Amiga. Unfortunately, however, X-CAD is far from being the Amiga's most useful CAD package. While the program's muscle is solid, flexing it is a formidable challenge.

X-CAD arrives with two disks—Libraries (which includes an Install routine for hard-drive users) and Workbench (which noticeably lacks such essentials as DIR, MAKEDIR, INFO, and INIT). Because the program eschews Intuition, the documentation is the only place to begin.

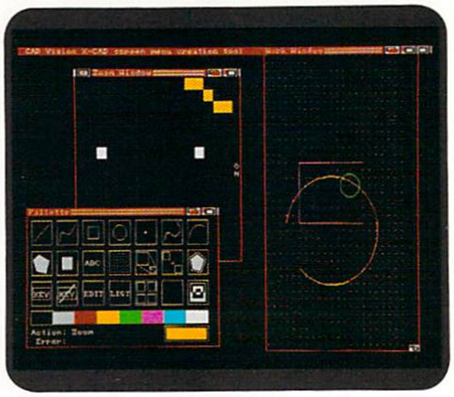
Manual Non-Transmission

The Preface states that X-CAD's manual "should be used with other reference manuals provided." No additional references were included with my package, and the technical service representative at Haitex, Taurus' US distributor, told me that he had never heard of them.

The documentation starts at the logical beginning, and its explanatory format for commands is good—each begins with an overview of the command and a list of available modifiers. On subsequent mentions of modifiers, the manual either refers you to the nearest explanation or rehashes. I also commend the manual's treatment of X-CAD's layers concept; it compares each of the 256 available layers and eight depth levels to a transparent sheet. You can view the sheets in total from the top, or withdraw some (turn the layers off) to reveal or conceal parts of the drawing.

Organizational difficulties crop up early, however, with a proclamation that the screen is split into three areas; two paragraphs down, a fourth area is referenced. Under the guise of a tutorial comes a tedious 100-page compendium of commands. One well-written description of each command in the manual proper would effectively replace this.

Some pertinent facts are buried in obscure places. For instance, virtually every phrase of each command must end with a colon, yet not until over 150 pages into the manual will you find this mentioned. Other key information does not appear at all. Dimension lines, which specify the size of an object, should be accurate to at least four decimal places, yet X-CAD's manual does not explain how to enter accurate values. I learned by trial to mark a dimension line's starting point with a mouse click and then to use the IX ("draw a line in a stated Increment along the X-axis") or IY command to compute the end point. While you can sometimes discover on your own how to make the program work, you should not have to.



ModMenu: If all of X-CAD was this easy. . .

For many commands the manual offers examples instead of explanations in hopes that "these examples will become clearer the more commands you learn." Although examples represent the manual's strongest point, some fail to carry the full burden of explanation, and too often, cryptic wording, grammatical problems, and poor sentence structure ruin the effect. Proprietary names add another element of confusion, and the typeface that displays command syntax contains several virtually illegible letters.

Well, you think, the manual may be poorly written and unorganized, but at least you can locate information via the index, right? Wrong. An index is listed in the table of contents (which appears in the middle of the book), but it is not actually in the manual.

On To Draw

The program requires a minimum of either 1.5 or 2 megabytes of memory (depending which page of the manual you believe) and at least two floppy drives, but suggests as much memory as you can afford plus a 20MB hard disk. I used both an A1000 with 1.5 megs and an A2000 with three megabytes, each with two floppy drives.

X-CAD offers all the customary CAD commands but one: Its lack of an Undo command represents a serious handicap. You can draw precision lines, rectangles, circles, arcs, and ellipses, combine them into objects, and then fill these objects with hatched, patterned, or solid lines. You can also move, mirror, rotate, scale, and copy most objects.

X-CAD offers several features that other Amiga CAD programs do not. One of these mirrors a scene (displaying it upside down and backwards) but duplicates any text upright. The Fillet command allows you to round corners, while Spline allows you to position points on the screen through which the program then draws a fair curve. Unlike other programs that let you change the depth of only one item at a time, X-CAD allows you to group items into a box and, with one step, reassign them all to a different layer.

One of X-CAD's most powerful commands is Trim, which forces lines to either extend out or trim back to an intersection of lines or any other designated point. Unfortunately, the program often erases the part you intended to leave and leaves the section you had wanted to trim.

Mousing Around

X-CAD's interface consists of a series of yellow boxes (called AutoMenus) pasted across the top third of the screen. To is-

sue commands, you must dance your mouse through unintuitive, zig-zag box-clicking sequences. It takes as many as 30 clicks to set up a Viewport (X-CAD's name for window), and if you skip or misplace any required element, the program rejects your entire effort and returns you to square one, usually without an error message.

The only alternative to clicking boxes is to type in the command. While you can repeat part of the last command sequence by entering =, this saves you considerable time only on commands that include names or numerical values.

For both clicking and typing, X-CAD insists on adherence to a verb-noun-modifier command format, and occasional surprise variations of the sequence constitute another stumbling block. Despite an ever-active Command Line Interface window at the bottom of the screen, no message ever warns which commands break the established pattern. Furthermore, the screen makes no distinction between those modifiers the program considers necessary, optional, and illegal.

Still, as I read the manual I felt as if I might be mastering the complexities of the program. It is no wonder, though, that when I tried the commands without the manual, confusion reigned: The command to verify linked relationships has only three options according to the manual, yet 18 choices appear on screen.

I came across a number of bugs in my tests. When trying out the Array command, I copied the manual's example verbatim six times. Four times the program refused to accept the parameters; the other two times it accepted the entries, but the resulting lines bore no resemblance to the value entered.

The Haitex technical service rep confirmed that the orthogogonal (x- and y-axis) locks rarely work. This makes drawing straight lines difficult because the grid snap works only if your window is zoomed into an area small enough for the program to display the grid.

Seeing Things

You can draw in eight colors, but to select a color, you must enter its number. The program doesn't tell you which number represents which color, and although the manual contains one reference listing, unless you turned the corner of the page when you first saw it, good luck finding it again.

The screen redraws quickly, but X-CAD's interface slows the production pace. Most drawing programs let you work on a magnified portion of your drawing while you observe how your work affects the whole picture in another window on the same screen. X-CAD, however, requires that you zoom in and out of a single screen—a process that devours time and breaks concentration. I used X-CAD to render a project for a client, and found it took me twice as long as if I had drawn it by hand.

Although the program's lone sample drawing would not load into my A1000, I have produced full-size plans on it by dividing my page into sections and saving each separately. The program's organization of projects into sheets (analogous to individual pieces of paper) forces you to break every project into several smaller files even if you have maximum memory. By experimenting, you can figure out how to layer sheets and then output one section at a time to produce a single drawing (these methods are not discussed in the manual, however).

X-CAD's plot set-up method is simple: Just click in a requester to select your plotter. Difficulties can arise, however, because the program leaves the device's pen where the last line of your drawing file ends. I split one drawing into two disk files after I had lined up the parts for plotting, but because the pen did not start file two from the home position, the sections did not align.

X-CAD lets you change the name of an existing drawing as you reload it, and thus makes it easy to create multiple templates.

X-CAD does not incorporate standard Amiga requesters. The manual warns you to use the full pathname when opening and saving files and so on, as the program "does not consult the currently selected symbol directory." That means no prompt reminds you of what is already on your disk, or even which disk the program will read from or write to. Before you CLI users smirk "No problem," remember that Taurus ►

scratched query commands like DIR from the X-CAD disk.

Intuitive Discovery!

The last eight of the manual's 300 pages describe how to create Screen-Menus. . . real Intuition-style screens with gadgets and icons! By creating ScreenMenus, you can rework the X-CAD interface and use the program more efficiently.

To build a ScreenMenu, you click into the Modmenu program from Work-bench. (While the manual promises a sample ScreenMenu on the Data disk, not only is there no menu, there is not even a Data disk.) Except for its requester, the ModMenu screen looks like it was extracted from Electronic Arts' DeluxePaint II. A series of boxes on the screen invites you to click inside to draw lines, rectangles, circles, and arcs—the building blocks for ScreenMenus.

"Whereas AutoMenus require at least three selections to execute any command," the manual proclaims, "a ScreenMenu may contain a complete command string and therefore require fewer selections to execute commands." Say, this is such a good idea Taurus should have incorporated it into the program's primary interface! Unfortunately, when I tried using the ScreenMenus I created, the program crashed frequently.

A View From The Top

Every program has a learning curve, but X-CAD's is mountainous. An incline this steep slashes into productivity. X-CAD's dongle has the potential for holding up production, too; in my opinion, no professional should have to risk not being able to save or plot a drawing because of a missing or broken dongle. Because the Data disk is missing, the promised On-Line Documentation—essential for this program—does not exist. Also, not a single library of symbols is included. For a program costing $600, there is no excuse for such omissions.

X-CAD's speed and power are impressive. I hope that the programmers design future releases with a more intuitive interface. As it stands, the program is poorly documented, awkwardly constructed, and full of bugs. In the meantime, I am looking forward to seeing X-Shell from GRAFX Computing, a program that promises to take the hassle out of using X-CAD.

X-CAD
Taurus Software
Guildford, Surrey, UK
0483/579399
Distributed by Haitex Resources
208 Carrollton Park, Suite 1207
Carrollton, TX 75006
214/241-8030
$599.95
Two megabytes required.

Fancy 3D Fonts

Extra! Read all about it!

By Wayland Strickland

WORDS, ACCORDING TO Rudyard Kipling, are the most powerful drug of mankind. In the realm of 3-D graphics, however, only one of the most popular programs comes with the means to readily inject three-dimensional displays with the power of text. 3-D designers who yearn to say it with style now have more choices.

Fancy 3D Fonts, from Access Technologies, comes in two versions—one for use with Sculpt 3D and Animate 3D (Byte by Byte), the other for use with Turbo Silver (Impulse). Each is sold separately, and except for the fact that the Turbo Silver version includes a set of chess pieces, their offerings are identical. They contain three font styles: Fanc, Bold, and Ital, which emulate Clarendon Medium, Helvetica Bold, and Bookman Italic, respectively. In both versions, Fanc is supplied on one disk, and the other fonts reside on a second.

Speaking Up and Down

The three styles offer both uppercase and lowercase characters, plus punctuation marks in separate subdirectories. While each style has a set of symbols and international characters, these offerings ►

are not the same for any two fonts. For instance, the asterisk appears in Bold and Ital but not in Fanc, while the £ is included in Fanc and Ital but not in Bold. The circumflex, dieresis, and both acute and grave accents are included in all styles so you can build some foreign letters yourself. Finally, Bold does not provide numerals, but the other styles do.

Impressively, the fonts make optimal use of the 3-D design program for which they are created. For instance, while the Turbo Silver and Sculpt 3D versions of Bold look alike, they are actually constructed differently. Neither font contains unnecessary faces or edges that would slow the rendering process and consume valuable memory.

Each character in the Fancy 3D Fonts packages is stored as an individual object. To load the fonts into your modeling program, follow the same procedure you would to import any object. You place letters side by side in order; spacing characters and words is a matter of eyeballing in Sculpt 3D's Tri-View or in Turbo Silver's Cell Editor. The back faces of all fonts are rendered so you can view them from the rear, and the characters are extruded (you can adjust the scale of extrusion in all dimensions once you have loaded them in your 3-D program). As with any other vector graphic,



Fancy 3D Fonts goes European.

you can reduce and enlarge the fonts without a loss of resolution.

Say No More

The instructions are extremely brief. The $5\frac{1}{4} \times 8\frac{1}{2}$ sheet simply lists the various fonts and subdirectories and gives you an example of how to load them. It does not provide information as to the size of the fonts and their relative proportions, and there are no tips for forming words and phrases. The Read_Me files on disk merely reiterate what is printed. Otherwise, however, because there is no program to learn per se, the documentation is adequate. The software is not copy protected, and you can install Fancy 3D Fonts on a hard disk.

All of the fonts are nicely designed and well constructed. At $79.95, though, Fancy 3D Fonts is expensive. For $119.95, InterFont (Syndesis) provides six type styles, automatic spacing and alignment, various textures, the ability to design your own 3-D fonts, and compatability with multiple 3-D design programs. Fortunately, Access Technologies recognizes the importance of provisions for creating and customizing characters, too. The company has announced 2D to 3D Converter, a program supporting the Byte by Byte format that lets you alter both color and texture of Fancy 3D font faces and sides, and extrude them before transportation to your modeling package. (Fancy 3D Fonts owners can purchase Converter directly from Access for an introductory price of $19.95.) You ►

Circle 117 on Reader Service card.

will be pleased with the quality of Fancy 3D Fonts.

Fancy 3D Fonts
Access Technologies Inc.
PO Box 202197
Austin, TX 78720
512/343-9564
$79.95
No special requirements.

Toshiba P341SL

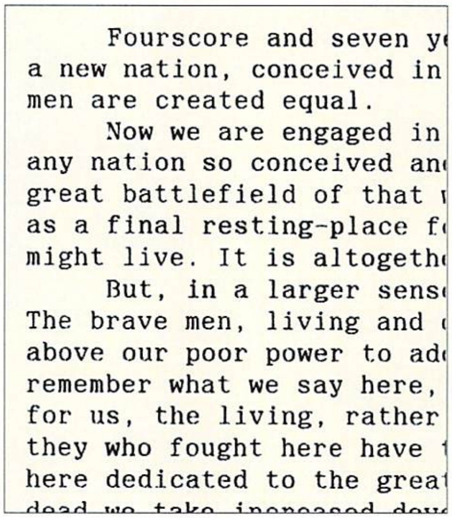
Good things print for those who wait.

By Bob Ryan

ACCESSIBLE VIA Workbench 1.3, the Toshiba P300 line of 24-pin dot-matrix printers feature built-in support for three types of printers: the Toshiba 300 series, Qume Sprint devices, and IBM Proprinters. Although the use of a standard printer device makes the three-in-one concept less valuable to an Amiga owner than to an MS-DOS devotee, the Toshiba P341SL is nonetheless useful.

Down to Specifics

With a footprint of 22 × 15 inches and a weight of 21 pounds, the P341SL is a mid-size unit. Its wide carriage makes it ideal for printing spreadsheets and other special documents.


Fourscore and seven y
a new nation, conceived in
men are created equal.
Now we are engaged in
any nation so conceived an
great battlefield of that
as a final resting-place f
might live. It is altogeth
But, in a larger sens
The brave men, living and
above our poor power to ad
remember what we say here,
for us, the living, rather
they who fought here have
here dedicated to the grea

Address high-quality type with the P341SL.

The P341SL has a wealth of standard features, including both parallel and serial interfaces. The unit allows friction and tractor feed—it even lets you print envelopes and single sheets without removing the paper from the tractor feed. A sound baffle under the dust cover muffles noise appreciably.

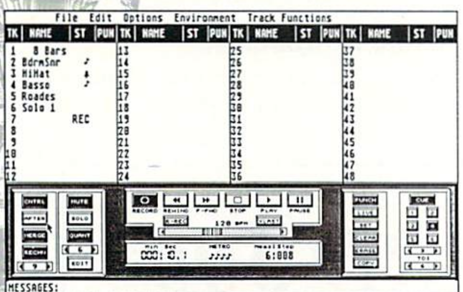
In native mode, the P341SL offers three type styles (draft, near-letter quality, and condensed), and two fonts (Courier and Prestige Elite). In addition, you can have up to four fonts resident on optional cartridges and two in the printer's 32K memory bank. (Without downloadable fonts, the memory serves as a print buffer.) You can choose from five character pitches (10, 12, 15, 16.7, and 20 characters per inch) and four line-space settings (three, four, six, and eight lines per inch), and specify line spacings to 1/120th of an inch.

The front panel of the Toshiba P341SL is pretty high tech. Four buttons give you access to all the features by scrolling through a series of menus, while a liquid-crystal display shows your place. You can set your own power-up values or use one of the four preset configurations. ►

"A level of excellence used to determine quality."

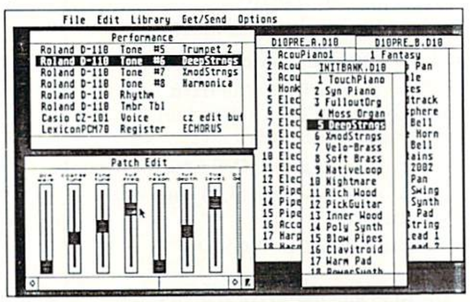
Standards
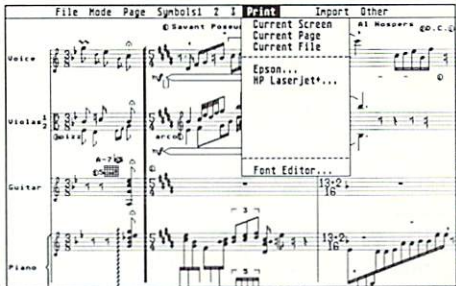
As an Amiga owner you've already invested in the machine that sets the highest standard of excellence for all facets of creative computer applications. You have been waiting patiently for music software that lives up to those standards. Now, at last that level of achievement has been reached.



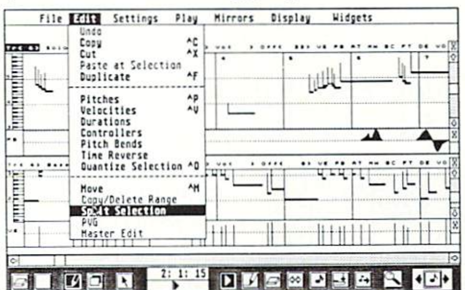
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MISCELLANEOUS
MODEL-A MIDI INTERFACE

Music Software of the Year, 1988
Commodore Magazine

"The most powerful and dependable of MIDI sequencers for the Amiga is KCS. . ."
Amiga World

"(Copyist is) A composer's delight that provides score editing, file conversion capability, and custom printing all in one package."
Amiga World

"(MRS) . . . compared to other sequencers, it is a great value."
Amigo Times

". . . (Level II) is a powerful collection of MIDI recording and editing tools that works well, is responsive, and is designed with the high-end user in mind."
Amiga SENTRY

Dr. T's
MUSIC SOFTWARE
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Chestnut Hill, MA. 02167
U.S.A.

(617) 244-6954
FAX (617) 244-5243

While I like the sophistication and versatility, I am dismayed at not being able to perform a simple manual line feed from the front panel; you must use the platen knob to fine position paper.

OUTPUT, PLEASE

To test speed performance, I put the P341SL throught the same tests I used with five other 24-pin printers (see "Lasting Impressions," p. 25, in the July '88 issue of *AmigaWorld* for details). In draft mode, the printer scored well at 106 characters per second, while in letter-quality mode, the printer came in near the low end of the spectrum at 44 characters per second. The Toshiba fared better in terms of print quality, producing some of the best type I've seen from a 24-pin printer.

Graphics-printing is both a strength and an Achilles' heel for the P341SL. The unit's 360 × 360-dot resolution produces excellent quality graphics; the problem is speed. A graphics dump that took 53 seconds on an Epson LQ takes nearly five minutes on the P341SL. I began to suspect that the printer driver was at fault, but found that the device was nearly as slow under Epson emulation.

If you need a wide carriage and high-quality output, you will be pleased with the Toshiba P341SL. If you want a fast graphics printer, look elsewhere.

Toshiba P341SL
Toshiba America Inc.
9740 Irvine Blvd.
Irvine, CA 92718
800/457-7777
$999
No special requirements.

MASTERING CLI 2.0

A DOS dossier on disk.

By C.W. Mann

A POWERFUL EDUCATIONAL tool for AmigaDOS 1.2 newcomers, Mastering CLI introduces you to the Amiga's Command Line Interface (CLI) through interactive instruction. It can also act as your guardian angel as you shift gears and make your first attempts at using the CLI.

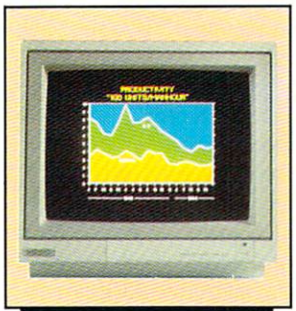
The program disk has a pared-down version of Workbench, three executable programs, 52 text files in a special Help directory, and an MCAssist directory with small support files.

Mastering CLI's distribution disk is bootable and non copy-protected. Clicking the Tutor icon in the opening window takes you to a screen with several pull-down menus. (Tutor's text window is designed for use in non-interlaced mode only, and you cannot resize it.) From the first menu, you can open a CLI window, access Preferences, or quit the program. The other menus offer general-topic presentations and 48 tutorials on specific AmigaDOS commands, listed in alphabetical order. To begin, you must open a CLI window so you can follow the program's numerous examples as you progress through the tutorials. You can make your own lesson plan, starting with any command.

LOOK, NO HANDS!

Wouldn't it have been nice if your first bicycle had been equipped with retract- ►

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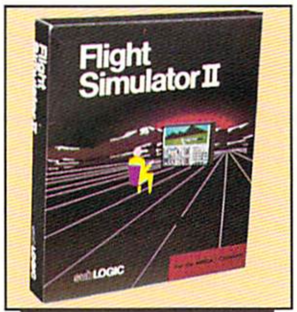
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able training wheels? Mastering CLI offers such support in the form of two other multitasking programs: Assistant and TinyAssist. After graduating from the Tutor program, you can pedal off on the road to DOS with either help utility running in the background.

Assistant is a gadget-driven, half-screen window with 21 buttons that summon on-the-spot help for commonly used CLI commands. TinyAssist is an inconspicuous title bar containing help for the same 21 commands in menus. Assistant adds a quick-reference guide to the complete AmigaDOS command set, and features a Reduce gadget that lets you disable the program and shrink its window at any time. Both Assistant and TinyAssist offer high-level DOS support, and each allows you to return to the Tutor for in-depth review if you get stuck.

Although the program's text files need to be proofread, Mastering CLI's presentation is extremely thorough. The tutorials cover literally every AmigaDOS command—even the potentially destructive ones. You could, for instance, wipe out a day's worth of work by trying out the Format command. The program warns you against the consequences of rash action in every appropriate place, but it's up to you to read and follow the instructions carefully.

Ironically, you need extensive CLI experience to install Mastering CLI on a hard drive, as the package does not include installation instructions. Although Tutor runs fine once properly set up, it will crash if the utility's special directories are not assigned to the correct paths. I was unable to get either Assistant or TinyAssist to operate properly on my hard drive—while some functions worked others did not.

CAN'T JUDGE BY THE COVER

Although Mastering CLI's documentation doesn't look like anything special—it consists of one $8\frac{1}{2} \times 11$-inch sheet, printed on both sides—it is extremely well written and contains everything you need to get started. It also includes a list of AmigaDOS 1.2 primitive CLI-editing features in quick-reference format.

However you may feel about Mastering CLI's questionable cover design, the product inside is good. In my tests, all three program components multitasked flawlessly with a high-level word processor, four utility programs, Kickstart, and Workbench 1.3. I recommend the program to any Amiga beginner who wants to learn the fundamentals of AmigaDOS 1.2. The rub, of course, is that we are already well into version 1.3, with 1.4 on the horizon. If the program's tutorial files were appropriately proofread, and if it offered a resizable Tutor window, full hard-disk compatibility, and coverage of the current AmigaDOS release, I would recommend it more heartily. Still, it is a good investment for a beginning CLI user.

Editor's Note: At press time we learned that Graphics Expressions is changing the format for Mastering CLI. The reviewed program is being retitled Mastering CLI: Volume II for Intermediate Users, and will cover Amiga DOS 1.3. Shell reference and editing are reportedly being added to the help utilities, and Tutor is said to include discussions of RAD:, environment variables, and residence, among other things.

Mastering CLI: Volume I, a lower-level program with a highly visual interface, is scheduled for later release. It is designed to draw parallels between Workbench and the ►

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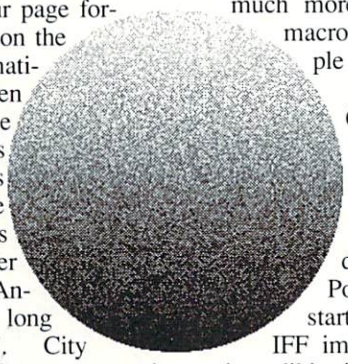
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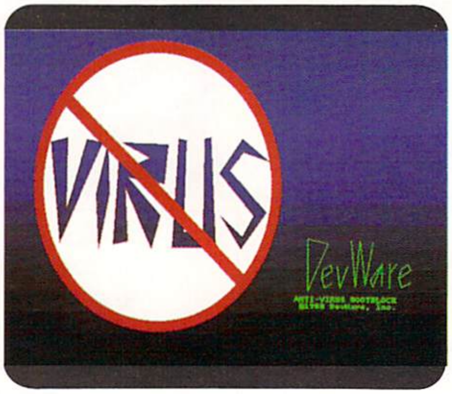
ANTI-VIRUS

A new recruit in the war on disk disease.

By Louis R. Wallace

HUT, TWO, THREE, four! Marching in to join the struggle against ferocious Amiga viruses comes Anti-Virus from DevWare. This non-copy-protected package contains a troop of utilities that seek out and destroy viruses.

The first weapon in Anti-Virus's arsenal is vCat, essentially a database you use to store duplicates of boot blocks from copy-protected software. To enter a boot block into the catalog, you simply select a drive, insert the disk containing the custom block into that drive, and click on the Save gadget. If a cataloged disk later becomes infected, you can



Seeing this screen can ease your mind.

restore the boot block simply by clicking on vCat's Restore gadget. Unlike the similar database function in Discovery Software's VIP, you cannot alphabetize or otherwise organize your program entries.

SUITING UP FOR BATTLE

The vInstall option comes in two forms: one within vCat and a stand-alone version you can access without entering vCat. Both overwrite the boot block of your bootable applications disk with a custom block. When you boot with a vInstall-protected disk, the colorful, hi-res Anti-Virus logo appears on the screen instantly (within a second). If a treated disk does not display the screen when you boot, or if the graphic is altered, you can consider the disk suspect. When you detect a virus with vInstall, vReboot will remove it from memory and initiate a warm boot from the inserted Workbench disk.

The manual makes it clear that vInstall should not be used with any software that uses a custom boot block as a part of copy protection; doing so will ruin the disk. The documentation also warns that unless you are certain a disk's boot block is standard, you should store it in vCat before treating it with vInstall.

Another vCat feature is View, which ►

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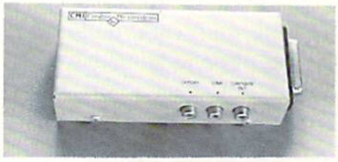
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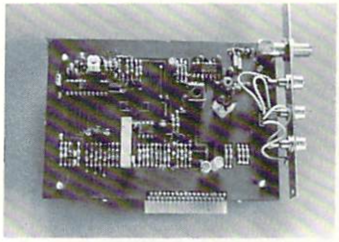
*Additional Commodore compatible Kickstart ROM socket feature that allows Kickstart in ROM plus 256K additional memory.

NOTE: When purchasing a speed-up board for your Amiga be sure to understand the REAL differences in performance among the product choices. Not all 68020 boards will be faster for all applications. ***FOR EXAMPLE, the cheaper 68020 boards (which run at 7.16MHZ) provide substantially faster increases only when used with the very few software packages specifically written for 68020/68881-ONLY after the additional purchase of an MC68881 FPU****. However, all applications will run faster with a Processor Accelerator at 14.32MHZ.*

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displays on screen the contents of the boot blocks in your choice of drives: df0:, df1:, df2:, or df3:. Two more functions let you compare (by bytes) a boot block you have stored in vCat with one on a loaded disk, and install the standard AmigaDOS boot block on a disk in a specified drive.

A utility called vCheck runs in the background while you work, monitoring all the disks you place in your drives. If you load a disk containing a non-standard boot block other than a DevWare custom block, a warning requester appears.

A Virus of a Different Color

As I was finishing my review, an update of Anti-Virus arrived. The revision includes vTrojan, a specialty database that addresses so-called "trojan horse" viruses, including the IRQ virus, that attack specific programs. vTrojan lets you store information (including file size) describing the characteristics of a file, a group of files, or an entire floppy disk or hard disk. After you have stored this information, you can later recall it and have vTrojan compare stored data with that on a disk to determine whether files have been altered. A change indicates possible viral infection.

The vTrojan utility offers two levels of file inspection. The first is fast, but not thorough. The second is far more comprehensive, but is considerably slower, requiring approximately five minutes to analyze a full floppy disk. After vTrojan has analyzed the two sets of files, the program reports, on screen, the differences found. (I have been unable to obtain an IRQ virus, so I could not test this aspect of the utility.)

Assembling Your Batallion

Although Anti-Virus offers a money-back guarantee against all viruses, I am convinced that it should not be your only defense. There are shortcomings. For one, the documentation states that boot-block viruses are the only strain your Amiga is susceptible to, and as is evidenced by the addition of vTrojan, that is no longer true. Also, vCheck does not identify viruses, it simply determines whether a boot block is standard. Both VIP and the public-domain program VirusX are much more discerning, being able to recognize the specific virus (including the IRQ virus) that your disk is infected with.

While vTrojan offers protection against the newest styles of software terrorism, it is very cumbersome to use. The vInstall option is good in that it lets you know very quickly if your disk has been hit by a boot-block virus. It is, however, no better in that regard—or any other—than VirusX. In fact, VirusX is more effective than both vInstall and vCheck combined.

The best strategy for protection against viruses is still to regularly update your startup-sequence with the latest version of VirusX and to catalog your vulnerable boot blocks. vCat addresses the latter issue; if you do not already own a boot-block database program, you should consider Anti-Virus.

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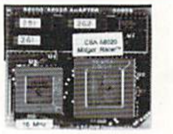
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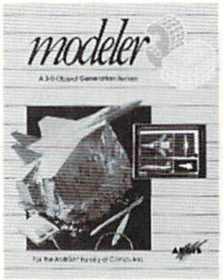
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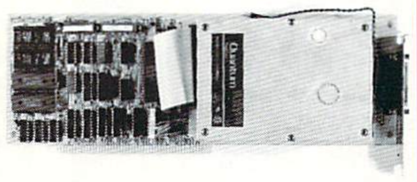
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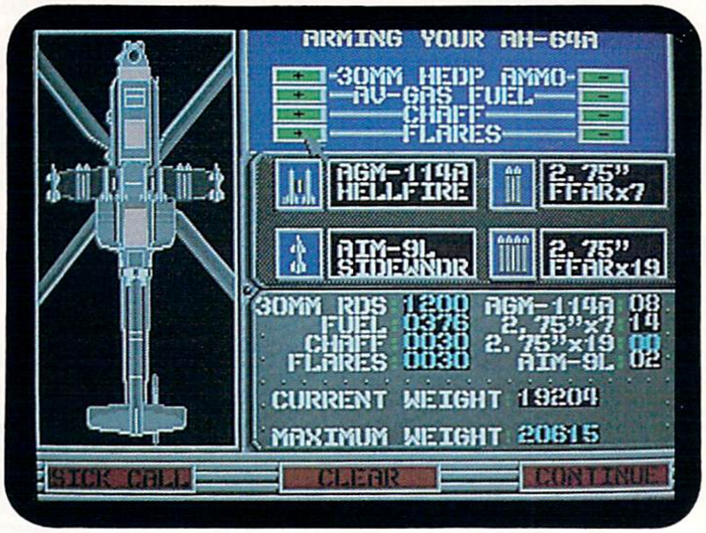
WHAT'S NEW?

You'll need a long extension cord this summer if you want a tan—these products cannot be ignored.

Compiled by Jan Jackson

Whirlybird with a Vengeance

HELLFIRE AND sidewinder missiles, folding fin aerial rockets, and a 30mm cannon round out your arsenal in **Gunship**, a 3-D flight-simulation game. You fly documented missions in Southeast Asia, Central America, the Middle East, and Western Europe in an AH-64 Apache—the U.S. Army's attack helicopter. For $54.95, the game offers multilevel challenges as well as commendations and promotions for successful tours. Mission headquarters is MicroProse, 180 Lakefront Dr., Hunt Valley, MD 21030, 301/771-1151. Reader service number 526.



Stop them dead in their tracks.

Channeling

WITH **IDS MULTIBOARD** ($349), you can create your own bulletin board system. Users could communicate privately or teleconference in any mix on 16 public and 16 private channels, access electronic mail and over 40 file libraries and message bases, use a word processor or share private communications on line on your BBS. You can customize your BBS' pull-down menus with MenuMaker, a built-in tool. You can assign individual access privileges to each user for functions such as read, write, upload and download. IDS MultiBoard provides 535 security levels, with instant carrier loss recovery, baud rate detection and an optional call-back security function. All sysop maintenance functions are integrated and performed automatically. Contact Inter-Core Development Systems, 7 Dover Hill Dr., Nesconset, NY 11767, 516/361-8628. Reader service number 505.

Comports ($295), a multichannel serial communications board, features two channels connected on external male connectors, one 25- and one 15-pin, and six channels on two internal connectors. The RS-232C and the RS-411 drivers and receivers are standard DTE. The A2000 board is auto-configured with up to eight channels per board providing 32 channels that can support IDS MultiBoard. The baud rate is selectable up to 57.6K. Contact Amigo Business Computers, 192 Laurel Road, East Northport, NY 11731, 516/757-7234. Reader service number 506.

Absolute Power

HOW WOULD YOU like to have complete control over a municipality? With **Simcity**, you can build your own or choose one of eight cities on the verge of disaster. The game's scenarios include: San Francisco, 1906, just before the great quake; Tokyo, 1957, before a monster attack; and Boston, 2010, just before a nuclear meltdown. You do the planning and zoning. If you must destroy to have a good time, wipe out your city through terrorism, financial mismanagement, or natural disaster. Simcity retails for $49.95. Take over by calling Maxis Software, 953 Mountain View Dr., Suite 113, Lafayette, CA 94549, 415/376-6434. Reader service number 501.

See the Light

USE **LIGHTBOX** ($189) to mimic the light table used in conventional animation. You will be able to see your drawings as they progress, as though you were using translucent paper. The program writes standard IFF files and lets you work on any drawing in a sequence at any time. R & DL Productions has the particulars. Contact them at 11-24 46th Ave. #2A, Long Island City, NY 11101, 718/392-4090. Reader service number 519. ►

SYNCHRONEITY

WITH **PAGESYNC**, you can create timed interaction between Amiga-based graphics and professional-quality audio. You can control both an animation based upon MIDI signals and can cause a cartoon to literally play a MIDI instrument. Get back to the drawing board with Mindware, 110 Dunlop St., Box 22158, Barrie, Ontario, Canada L4M 5R3, 705/737-5998. Reader service number 516.



Accompany your animations on a keyboard.

VIVA LA INTERACTIVE VIDEO

ONE PICTURE IS worth a thousand words, says MichTron with VIVA (Visually Interfaced Video Authoring). This program will let you set up an interactive situation for training, simulations, technical support, guided tours, or entertainment. You can get this authoring language in three versions. **VIVA Presents** ($49.95) contains 18 icons for creating demos and simple presentations. The next step up, **VIVA** ($99.95), contains all available icon scripting groups except record keeping and artificial intelligence, which are included in **VIVA Professional** ($599.95). Details are available from MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-5700. Reader service number 518.

COMMUNICATION FROM WITHIN

CONNECT YOUR A2000 with your favorite telecommunication network via **Supramodem 2400zi**, a half-card internal modem that supports asynchronous operation at 2400, 1200, and 300 baud rates. You can create custom configurations and store them in the modem's nonvolatile memory. The unit is compatible with the Hayes AT command set as well as Bell 103/212A and CCITT V.21/V.22bis protocols. Features include autoanswer and autodial, and an adjustable-volume speaker for monitoring call progress. For $179.95, you also get a telephone cable, a quick-reference card, and free on-line time for some popular services. Your connection is Supra Corp., 1133 Commercial Way, Albany, OR 97321, 503/967-9075. Reader service number 504.

CURE FOR BOREDOM

THESE BOARDS ARE only out for one thing: speed. The **Hurricane 2800** is both an autobooting SCSI disc controller and synchronous 28MHz memory board. The card includes math coprocessor options up to 33MHz. The companion M2000 memory board is socketed for up to four megabytes of 32-bit fast memory. A complete configuration including a 68030 processor, 25MHz 68882 math coprocessor, and two megabytes of 32-bit memory retails for $3300. Contact Ronin Research and Development Inc., PO Box 1093, Alameda, CA 94501, 415/769-9325. Reader service number 525.

Great Valley Products' 68030 coprocessors come in four flavors. **Impact A2000-030/16** with a 16MHz clock retails for $849; the 25MHz **Impact A2000-030/25** is $999; **Impact A2000-030 RAM/4** ($1999) is installed with a four-megabyte 32-bit wide DRAM daughterboard expandable for eight megs, and the **Impact A2000-882/25** comes with a 25MHz 68882 math coprocessor for $689. The boards' asynchronous design allows them to run independently of your system's clock. Call Great Valley Products, 225 Plank Ave., Paoli, PA 19301, 215/889-9411. Reader service number 522.

LILLIPUTIAN PERIPHERALS

FOR BIG COMPUTING in a small space, try **Micromegs** ($199), a scaled-down alternative to Commodore's A501 internal RAM expander. The board features one-megabit DRAM technology that reduces the length of the onboard conductors, four CMOS RAM chips, and a battery-backed clock.

For a ready-to-go SCSI hard-drive system, take a look at **Tiny Tiger Performance Plus**. It's available in four capacities: 45 ($899), 90 ($1199), 135 ($1469), 180 ($1649) and features a 24K ring buffer and a 20 millisecond access time. The **Tiny Tiger Budget series** includes a 30-megabyte Seagate ST138 for $659 and a 50-megabyte Seagate ST157 for $799. Race to the phone to call M.A.S.T., 3881 Benatar Way, Chico, CA 95928, 916/342-6278. Reader service number 512.

POSITIVELY PROGRESSIVE

PROGRESSIVE Peripherals wants you to expand your A2000. Try the **Megaboard 2000** with 256K chips and one or two megabytes of fast RAM. A Megaboard 2000 with two megabytes of RAM retails for $599.95.

If you're in the market for a hard drive, **The Vault** is available from 20 to 120 megabytes for your A500 or A2000. A 20-megabyte Vault with controller, software and cables retails for $599.95.

For real-time digitizing, the **FrameGrabber 256** ($699.95) lets you display 256 shades of gray and up to 16 images on the screen simutaneously.

The **Baud Bandit** ($49.95) telecommunications program supports an unlimited number of phone books of 200 entries each. Direct your inquiries to Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204, 303/825-4144. Reader service number 523. ►

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HARDWARE

MEMORY EXPANSION

Increase your Amiga's memory capacity! More and more titles are requiring 1 megabyte just to run!

The new enhanced chip set from Commodore is right around the corner which will allow graphics data to access up to 1 megabyte of memory. So let's face it, 1 megabyte of memory is clearly going to become the standard in the very near future.

Here are a few products that already require expanded memory in order to run on your Amiga:

Deluxe Paint III	Broadcast Titler
Photon Paint 2.0	X-CAD
Dragon's Lair	Professional Draw

FOR THE AMIGA 500:

A501 with 512k and clock	179.95
M501 with 512k and clock	179.95
Starboard II 0k	239.75
Starboard II 512k	399.75
Starboard II 1Meg	599.75
Starboard II 2Meg	795.00

FOR THE AMIGA 1000:

Starboard II 0k	239.75
Starboard II 512k	399.75
Starboard II 1Meg	599.75
Starboard II 2Meg	795.00

FOR THE AMIGA 2000:
8 UP Dip Memory Cards

With 0k	145.75
With 2Meg	595.00
With 4Meg	995.00
With 6Meg	1395.00

Drives

FData-10 ext. Drive	**139.75**
FData-20 ext. TwinDrive	**249.75**
int. 3.5" Drive A2000 only	145.75
AIR-Drive	169.75
Cal.Access CA-880	169.75
HardFrame SCSI Card	**239.75**
Starboard SCSI Module	97.75
Quantum 80MB Drive	875.00
Supra 20MB HDisk	649.00
Supra 30MB HDisk	749.00

Video / Graphics

A-Pro Draw 12x12	499.75
Amiga Live A 500	299.75
Amiga Live A 2000	329.75
Amiga Live A 1000	219.75
Color Splitter	85.75
Digi View 3.0 NTSC	139.75
Easyl 500	299.75
Easyl 1000	349.00
Easyl 2000	349.00
Flicker Fixer	499.00
Mitsubishi Multisyc Monitors for use with FlickerFixer :	
13" Screen size	**549.75**
16" Screen size	**1349.75**
20" Screen size	**1895.75**
Panasonic 1410 Kit	249.75
Perfect Vision	175.00
Super Gen	699.75
X-Specs 3D	97.75

SOFTWARE

Graphics & Video

Aegis Draw 2000	179.75
Animate 3D	99.75
Animation Multiplane	56.75
Animation Apprentice	199.75
Butcher 2.0	21.75
Calligrapher	87.75
Comic Setter	66.75
Deluxe Paint 2.0	94.75
Deluxe Productions	144.75
Director	44.95
Fantavision	39.95
Forms in Flight II	77.75
Interchange	29.75
Intro CAD 2.0	49.75
Lights, Camera, Action	52.75
Modeler 3D	72.50
Pageflipper Plus F/X	99.75
Photon Paint	66.75
Pixmate	49.75
Pro Video Plus	199.75
Sculpt 3D	69.75
Sculpt 4D	399.75
Terrain Disk	19.75
TV Show NTSC/PAL	62.95
TV-Text	62.95
Turbo Silver	129.75
Video Effects 3D	129.75
Video Titler	99.75
Videoscape 3D	119.75
Window Print II	22.75
X-CAD	349.75
Zoetrope	99.75

Miscellaneous

Epyx 500XJ	17.50
Mouse Pad	6.95
Modem Cable A500/2000	9.95
Multifunction Card	69.75
Phasar Gun	46.75
Processor Accelerator	149.50
Sony 3.5" DS/DD Disks	18.75
Supra Modem 2400 baud with cable	149.75

Sound / Midi

CMI Midi w/ Sync-Out	69.95
ECE-Midi w/ RS-232 thru	44.75
Future Sound Sampler	129.75
Soundscape Sampler	79.50
Perfect Sound A500/2000	59.75
Perfect Sound A1000	59.75
Midi Cable 5ft	8.75
Midi Cable 8ft color coded	11.95
Midi Gold for A2000 internal	69.95

NEW PRODUCTS

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Professional Draw	**139.75**
GFA Basic 3.0	**99.75**
"M"	**154.75**
B.A.D.	**32.75**
The Works! Platinum Edition	**169.95**
KCS Level II	**229.95**
Broadcast Titler	**199.95**

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Dr. T's DX-Heaven	99.75
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Dynamic Drums	47.75
Dynamic Studio	129.75
Midi Recording Studio	44.95
Music Mouse	49.75
Sound Quest Casio CZ	84.75
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Sound Quest D-50	99.75
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Synthia	66.75
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Aztec C Professional	145.75
Aztec Source Level Debug.	59.75
Benchmark Modula-2	134.75
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Maxi Plan Plus	129.75
Microfiche Filer II	112.75
Money Mentor 2.0	59.75
Phasar 3.0	66.75
Prowrite 2.0	72.50
Scribble 2.0	57.95
Softwood File II (GS)	79.75
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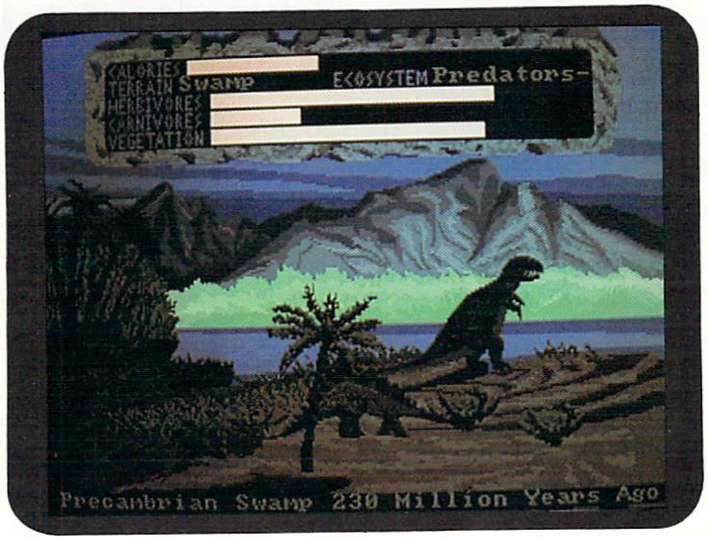
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Stroll with Tyrannosaurus rex.

All for One and One for All

BUDGETEER WILL HELP you prepare a budget for your home office or small business. Record and chart expenses then print reports or display your wealth in living color with an assortment of graphs, 36 bar charts, and four pie charts. You can load two files into memory at any time, to compare data. For $39.95, you get 68 expense and four credit categories. Throw out your pencils and call Prakticon Inc., 27 Hutchings Ct. N.E., Medicine Hat, Alberta, Canada T1C 1G3, 403/526-4765. Reader service number 521.

If You Hum a Few Bars

EVEN UNACCOMPLISHED, frustrated musicians can make music with **Harmony**. Hum or articulate vowel-based sounds into a microphone, click the mouse button to set the time and meter, and you have composed a new musical creation. Harmony will help you orchestrate your piece by adding supporting voices. You can assign 8SVX instruments to each track as well, and save your scores in Harmony or SMUS formats. The program retails for $199.95. Your music professor is Impulse Inc., 6870 Shingle Creek Parkway 112, Minneapolis, MN 55430, 612/566-0221. Reader service number 517.

Make Sense and Look Good Doing It

ELAN PERFORMER curtails the disk swapping and software loading usually involved when displaying imagery from different programs. For $59, you can access and display graphics and animations in Anim, RIFF, IFF, HAM, and RGB formats in a single presentation. The program features real-time interactive cutting and splicing capabilities. You can separate animations into their component frames, export them for editing, and then re-compress them in any sequence. Get your act together and call your agent, Elan Design, PO Box 31725, San Francisco, CA 94131, 415/621-8673. Reader service number 507.

General Assembly

DEVPAC AMIGA VERSION 2 is the latest release of HiSoft's assembly-language development tool. You get a combined 68000 macro assembler coupled with a full-screen editor, and a disassembler and debugger. A German language version is available. Devpac Version 2 retails at $99.95, an upgrade is $50. HiSoft's (Bedford, UK 0525 718181) U.S. distributor is MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-5700. Reader service number 508.

Picture Perfect

HAMANDEL ($39.95), a fractal arts program, lets you calculate Mandelbrot Set and Julia Set pictures with up to 256 color shades. Create sequences of up to 100 Mandelbrot Set images with set magnification of 6.66 percent with **AutoMAG**. This cell animator module lets you make animation sequences that use the HAM graphics mode for each individual ILBM standard image. Your images will be compatible with IFF standard techniques for combination with other HAM artwork using paint programs and ray-tracing packages. The AutoMAG can be purchased for $20 as a stand-alone program for use with HAMandel. You can purchase HAMandel plus the AutoMAG Module for $59.95 from MegageM, 1903 Adria, Santa Maria, CA 93454, 805/349-1104. Reader service number 509.

More Is Better

PRICED AT $299, the **Dual Serial Board** hardware and software combination gives you an integrated, multiple RS-232 serial port and lets you run three or more serial devices simutaneously. This dedicated board has two AT-compatible nine-pin D connectors and occupies a single slot on your A2000 motherboard. For more information, call ASDG, 925 Stewart St., Madison, WI 53713, 608/273-6585. Reader service number 524.

Or Else...

YOUR ONLY ADVANTAGE is an overhead view of the action as you control a six-person special-forces team assigned to rescue terrorist-held hostages at an embassy in **Hostage**. The ransom is $44.95 and instructions are available from Mindscape Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667. Reader service number 523. ■

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HORS D'OEUVRES

Hints, tips and techniques from your fellow Amiga users.

RUNning Speedup

I'VE GOT A tip that can greatly speed up batch files. In my startup sequence I have to load three background tasks: Gomf2.2, PopCli, and Mclk (a clock). If I run them like this:

```
C:RUN DF0:Gomf2.2
C:RUN DF0:PopCli
C:RUN DF0:Mclk
```

my drive starts to thrash and grind because of the conflicts between the three processes, and it takes a long time for all three to load. But if I copy them to RAM: first, and then run them from RAM:, I achieve a significant speed increase:

```
C:COPY DF0:Gomf2.2|PopCli|Mclk
  RAM:
C:RUN RAM:Gomf2.2
C:RUN RAM:PopCli
C:RUN RAM:Mclk
C:DELETE RAM:Gomf2.2 RAM:
  PopCli RAM:Mclk
```

This trick works even if you have to run only one program (unless it is the last command in the batch file). By the way, if you specify the full path names of commands, they work faster because the CLI doesn't have to go looking for them all over your disk. (Two tips for the price of one. What a bargain!)

Michal Todorovic
Santa Barbara, CA

Hybris Extras

FOR FANS OF Discovery's arcade game Hybris, I have learned that there is a "back door" to the game. To activate the back door, boot your Hybris disk as normal, then let the game go into the demo. When the High Scores list appears, type the word "commander" (without the quotes), then press either the mouse button or joystick button to start the game. You should now be in the game with the following extras active:

F1–F6	Change ship add-ons from normal (f1) to super (f6)
F7	On/off toggle for F1–F6
F8	Not used (?)
F9	Automatically finish current stage
F10	Toggle invincibility on/off

When the game first starts, press F7 to turn on the extras, and you're ready to go.

B. Williams
Wichita, KS

CLI Programs from Workbench

I HAVE GIVEN lectures at several conventions and users groups, and a question I'm commonly asked is "How can I make a CLI program run with an icon?"

There are a lot of programs available, especially in the public domain, that weren't written to run under the Workbench environment. Here is an easy way to get many of them to run under Workbench.

First, you need to create the icon. Do this by calling in IconEd from the System drawer of your Workbench disk. Draw a TOOL type icon, and save it to disk with the same name as the program you want it to run (IconEd will append the ".info" for you). Then leave IconEd and go to the Workbench.

Now open the disk where you've saved your icon, and select it, then select INFO from the Workbench menu. Click on the ADD gadget of the TOOL TYPES box, and then click inside the box to bring up the cursor. Now type in the following (all on one line):

```
WINDOW=CON:0/0/640/200/
  MY-WINDOW
```

and then click on SAVE. Now you only have to double click your new icon from Workbench to make the program run. If you have many programs to convert to Workbench, make a standard icon and copy it to each program name (e.g., copy ICON.info, GAME1.info, etc.).

You must remember to give the icon the same name as the program you want it to run before you call in INFO from the Workbench menu, or it won't open.

Jai Mayers
FutureScape Software
Bowie, MD

Sword of Sodan Tip

HERE'S A TIP for fans of Discovery Software's Sword of Sodan. On round #9, after you are on the beast, walk it back to the worm doing loops. The beast will then eat the worm piece by piece. Now walk it forward until two walls appear and water starts to rise. You must then keep jumping (for you and the beast to get air) until the beast sinks, and then you can pass.

Rich Benson
Chesterland, OH

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an* AmigaWorld *surprise gift.* ■

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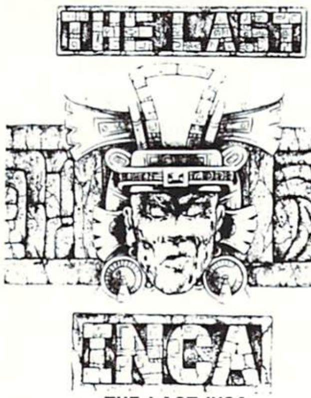
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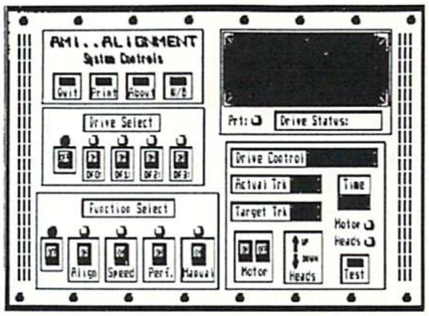
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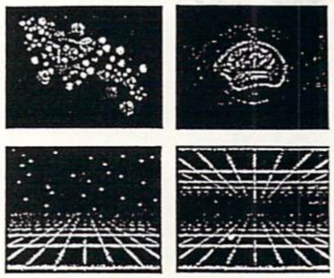
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HELP KEY

Speedy "Gon-wallez" tells you how to put the "Arriba, Arriba" in your Amiga.

By Louis R. Wallace

So Many Questions

Q: *I am going to trouble you with several questions that I have been unable to find answers to.*

1. Will it ever be possible to expand chip memory? If so, will it cause any compatibility problems with existing software and hardware?

2. Will the Amiga ever be able to have screen resolutions (flicker free, I hope) of up to 1024×1024? What kind of monitor would be required?

3. Are the new coprocessors and accelerators 100% compatible with all software and hardware, or do they require products designed for the 68020 (or even 68030)?

4. Will a 32-bit accelerator with 32-bit RAM be able to use the one meg of slower 16-bit RAM already in the A2000? Also, can the accelerator take advantage of 16-bit FAST RAM if it is present? Is there a limit to the amount of 32-bit RAM that can be used by the 32-bit accelerator?

5. Is there any advantage (other than speed) to an IBM-AT-compatible Bridgeboard? Can a Bridgeboard use any of the normal Amiga RAM or does it require its own expansion?

I know this is a lot of questions for one person to ask, but this is the only single source I know of where I can ask all these questions and hope for a reply.

Chris Ray
Chatsworth, GA

A: Yes, this is a lot for one letter, but they are all serious and legitimate questions, and I am sure that many other Amiga owners have also wondered about these things.

1. Yes, it will be possible to expand your available chip memory from the present 512K limit to 1024K by adding the new Fat Agnus chip from Commodore. For most A2000 owners, this upgrade will require a trip to an Amiga service center, as it isn't something that average users will want to do themselves. (It involves more than just replacing the custom chips.) These chips won't be widely available until the 1.4 version of AmigaDOS is released, and I don't expect that to happen until late this year. In most cases, the extra chip RAM should not cause any undue software compatibility problems, and may well make some packages work better than they do already (especially when multitasking several graphic applications).

2. If all you want is to increase your on-screen resolution to 1024×1024, you can already have nearly that level by buying the ultra high-resolution Viking I monitor ($1995) from Moniterm (see review on p. 14). This will give you a real screen resolution of about 1000×800 using a two-bitplane (four-color) display. Currently, there aren't a lot of programs that can take advantage of it, and to be honest, it will need the new Fat Agnus and AmigaDOS 1.4 before you can really make full use of its abilities. But it exists and it's available now.

3. As for the software/hardware compatibility of the new generation of coprocessors and accelerators, the answer depends on which one you are talking about. Last January, I upgraded my A2000 with Commodore's A2620 68020/68881 board with two megs of 32-bit memory. This is one well-designed product, as it allows you to reboot using either the 68020 or the 68000 (for use with those few products that refuse to run with the 68020 active). So far I have encountered only two programs (both games) that refuse to run with it installed. And in almost every instance, programs have been operating significantly faster, in most cases 300–400%. Those that are designed to take advantage of the 68020 and/or 68881 run much faster, but even programs written with just the 68000 in mind perform noticeably better.

4. When in 68020 mode (the default on power up), the computer is able to take full advantage of all the RAM present. For me that includes the two megs of 32-bit RAM as well as another three megs of standard RAM I have installed. The theoretical limit of 32-bit RAM would be eight megs, because the Amiga can address only nine megs and one comes on the motherboard. However, the A2620 board was designed to hold only four megs of 32-bit RAM directly on the card. (Other boards may well be designed for the full eight megs.)

This ability of the A2620 to address the standard Amiga RAM does not work in both directions, however. If you reboot using the normal 68000 CPU, the 32-bit RAM on the accelerator card is not available.

5. Finally, concerning the Bridgeboards, the two main advantages of the new AT Bridgeboard over the original XT Bridgeboard would be faster clock speed and one meg of RAM on the board (the XT Bridgeboard has only 512K). The Bridgeboard *cannot* use any of the Amiga's RAM for its own data processing, and if you want more than the supplied RAM, you will need to purchase a standard AT RAM expansion card and install it in one of the PC slots in the Amiga. ■

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from p. 22

```
IF search$ = "" THEN
   GOSUB ActivAll
   RETURN
END IF

GOSUB RecSearch
GOSUB ActivAll
RETURN

        REM Error Handling
eHandle:
   GOSUB ActivNone
IF ERR = 53 THEN
   WINDOW 2
   CLS
   LOCATE 3,1
   PRINT "File Does not Exist."
   PRINT "Choose NEW to create a file.
   PRINT
   INPUT "<Return to Continue> ";ans$
   GOSUB ActivProject
   RESUME res1
END IF

IF ERR = 64 THEN
   WINDOW 2
   CLS
   LOCATE 3,1
   PRINT "You entered an illegal file name"
   PRINT
   INPUT "<Return to Continue>";ans$
   GOSUB ActivProject
   RESUME res1
END IF

PRINT "Unrecoverable Error"
PRINT "Error Number ";ERR
PRINT "Consult your Amiga Basic manual"
CLOSE
RESET MENU
STOP

        REM Open Existing File
OpenF:

WINDOW 2,"Open",(50,50)-(400,150)
GOSUB ActivNone
LOCATE 3,1
PRINT "Open Data File"
PRINT
INPUT "Enter Name of File: ";f$
PRINT

IF f$ = "" THEN
   WINDOW CLOSE 2
   GOSUB ActivProject
   RETURN
END IF

f$=f$+".adr"
OPEN f$ FOR INPUT AS #1
rec = 0
PRINT "Reading data from file "; f$

WHILE NOT EOF(1)
   rec= rec +1
   FOR fld = 1 TO 7
      INPUT#1, lst$(rec,fld)
   NEXT fld
WEND

CLOSE #1
GOSUB FSort
GOSUB ActivAll

res1:
   WINDOW CLOSE 2
   RETURN

        REM Create New File
NewF:
   GOSUB ActivNone
   WINDOW 2,"New",(50,50)-(400,150)
   LOCATE 5,3
   PRINT "Create Data File"
   PRINT
   INPUT "Enter name for new file: ";f$

IF f$ = "" THEN
   WINDOW CLOSE 2
   GOSUB ActivProject
   RETURN
END IF

f$ = f$ + ".adr"
rec = 0
WINDOW CLOSE 2
GOSUB AddRec
GOSUB ActivAll
RETURN

        REM Activate Project Menu
ActivProject:

MENU 1,0,1,"Project"
MENU 1,1,1,"New"
MENU 1,2,1,"Open"
MENU 1,3,1,"Quit"
MENU 2,0,1,"Display"
MENU 2,1,0,"List"
MENU 2,2,0,"Forms"
MENU 3,0,1,"Records"
MENU 3,1,0,"Add"
MENU 3,2,0,"Search"
MENU 4,0,1,"Print"
MENU 4,1,0,"List"
MENU 4,2,0,"Labels"

RETURN

        REM Activate All Menus
ActivAll:

MENU 1,0,1,"Project"
MENU 1,1,1,"New"
MENU 1,2,1,"Open"
MENU 1,3,1,"Quit"
MENU 2,0,1,"Display"
MENU 2,1,1,"List"
MENU 2,2,1,"Forms"
MENU 3,0,1,"Records"
MENU 3,1,1,"Add"
MENU 3,2,1,"Search"
MENU 4,0,1,"Print"
MENU 4,1,1,"List"
MENU 4,2,1,"Labels"
MENU 5,0,1,f$

RETURN

        REM Deactivate All Menus
ActivNone:

MENU 1,0,0,"Project"
MENU 1,1,0,"New"
MENU 1,2,0,"Open"
MENU 1,3,0,"Quit"
MENU 2,0,0,"Display"
MENU 2,1,0,"List"
MENU 2,2,0,"Forms"
MENU 3,0,0,"Records"
MENU 3,1,0,"Add"
MENU 3,2,0,"Search"
MENU 4,0,0,"Print"
MENU 4,1,0,"List"
MENU 4,2,0,"Labels"
MENU 5,0,0,f$

RETURN
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```
        REM Add Data Routine
AddRec:
   GOSUB ActivNone
   WINDOW 3,"Add",(10,20)-(600,180)
   OPEN f$ FOR APPEND AS #1
   startrec = rec

GetData:
ans$=""

IF rec = 100 THEN
   LOCATE 5,8
   PRINT "File is filled to capacity"
   PRINT "Modify DIM statement for larger file"
   GOSUB WriteF
   GOSUB FSort
   WINDOW CLOSE 3
   GOSUB ActivAll
   RETURN
ELSE
   rec = rec + 1
   CLS
   LOCATE 5,4
   PRINT "Enter data"
   PRINT
   INPUT "Last Name: "; lst$(rec,1)
   INPUT "First Name: "; lst$(rec,2)
   INPUT "Street Address: "; lst$(rec,3)
   INPUT "City: "; lst$(rec,4)
   INPUT "State: "; lst$(rec,5)
   INPUT "Zip: "; lst$(rec,6)
   INPUT "Phone: "; lst$(rec,7)
END IF

CLS
LOCATE 5,15
INPUT "Another Record? (Y/N)"; ans$

IF ans$="Y" OR ans$="y" THEN
   GOTO GetData
ELSE
   GOSUB WriteF
   GOSUB FSort
   WINDOW CLOSE 3
   GOSUB ActivAll
   RETURN
END IF

        REM Write to File
WriteF:
IF startrec = 100 THEN
   CLOSE #1
ELSE
   FOR x = startrec + 1 TO rec
      FOR fld = 1 TO 7
         WRITE #1, lst$(x,fld)
      NEXT fld
   NEXT x
   CLOSE #1
END IF
RETURN

        REM Sorting Routine
FSort:
IF rec < 2 THEN RETURN

Bubble:
   Sflag = 0
   FOR x = 1 TO rec - 1
      IF lst$(x,1) > lst$(x+1,1) THEN
         FOR z = 1 TO 7
            temp$ = lst$(x,z)
            lst$(x,z) = lst$(x+1,z)
            lst$(x+1,z) = temp$
         NEXT z
         Sflag = 1
      END IF
   NEXT x
   IF Sflag = 1 THEN Bubble
RETURN
```

```
      REM Print Mailing Labels
PrintLab:
   GOSUB ActivNone
   WINDOW 4,"Labels",(100,30)-(350,140)
   LOCATE 5,5
   PRINT "Now Printing Labels..."
   OPEN "PRT:" FOR OUTPUT AS #7

FOR x = 1 TO rec
    PRINT #7, lst$(x,2);" ";lst$(x,1)
    PRINT #7, lst$(x,3)
    PRINT #7, lst$(x,4);" ";lst$(x,5);" ";lst$(x,6)
    PRINT #7,
    PRINT #7,
    PRINT #7,
NEXT x

CLOSE #7
WINDOW CLOSE 4
GOSUB ActivAll
RETURN

      REM Print List of Records
PrintRec:
   GOSUB ActivNone
   WINDOW 4,"Print",(100,30)-(350,140)
   LOCATE 5,5
   PRINT "Now Printing the Records..."
   OPEN "PRT:" FOR OUTPUT AS #7

FOR x = 1 TO rec
   FOR fld = 1 TO 7
      PRINT #7, lst$(x,fld); " ";
   NEXT fld
   PRINT #7,
NEXT x

CLOSE #7
WINDOW CLOSE 4
GOSUB ActivAll
RETURN

      REM Conduct Binary Search
RecSearch:
   lo = 0
   hi = rec

Loop:
   lookup = lo + INT((hi-lo+1)/2)

   IF search$ = lst$(lookup,1) THEN
      GOTO CheckRec

   ELSEIF search$ < lst$(lookup,1) THEN
         IF hi = lookup THEN
         GOTO EndSearch
         ELSE
            hi = lookup
            GOTO Loop
         END IF
   ELSE
         IF lo = lookup THEN
         GOTO EndSearch
         ELSE
            lo = lookup
            GOTO Loop
         END IF

   END IF

EndSearch:

   WINDOW 5,"NoMatch",(25,25)-(300,125)
   PRINT
   PRINT "No Match Found"
   PRINT
   INPUT "<Return to Continue>"; ans$
   WINDOW CLOSE 5

RETURN
```

►

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Features VC-Spreadsheet and an HP-10c calculator emulation. And of course it includes some less "business-like" items.

SE 119 mCAD
Design an addition to your home, or even your next computer, with this computer-aided design program.

SE 127 Wheel of Fortune
Sorry, Vanna is not included, but you do get a great computer version of the hottest game on TV! Also on the disk is Reversi, a talking Othello clone.

SE 128 Space Games
Gravity Wars and Cosmoroids (an asteroids-type game) highlight this game-player's delight!

SE 131 Packman '87
You haven't played Pac-Man until you've played Packman '87. A must for serious joystick junkies.

SE 134 Applications I
A nice mix of home applications including a label maker and a grocery-list maker. Also included is Amigazer, a home planetarium.

SE 139 Bull Run
Replay the first major battle of the Civil War in this brigade-level simulation. A data base program is also included.

SE 146 Calendar
Keep track of birthdays, holidays, appointments and other important events with this handy organizer. Also included is a checkbook program.

SE 151 4-in-a-Row
Try to beat the computer in this fun and challenging game; sort of a tic-tac-toe for the Future Shock generation.

From DevWare:

DW 9 JayMiner Slides
Features 17 hi-res IFF pictures drawn by Amiga designer Jay Miner that show the internals of the Amiga.

DW 25 BlitLab1.2
See exactly how the blitter works with this improved version of BlitLab. Included are a C language file requester, an IFF reader, and graphics programs.

DW 26 StructBrowser
This valuable learning tool lets you explore Intuition structures. Also included are DiskX, a program that lets you explore floppy disks, and Spool1.2, a print-spooling program.

DW 28 AudioTools2
Rob Peck's subroutines for controlling the audio device. Also on this disk are over 20 other helpful utilities such as PopUp, WindowUtil, MemClear, and 3DTerrain.

DW 31 ARP
Replace your large, inefficient AmigaDOS commands with the smaller, faster AmigaDOS Replacement Project commands.

From SystemEyes: (Fred Fish Disks)

FF 1 Dhrystone
The very first Fred Fish disk! Get a copy of the dhrystone benchmark test along with a tutorial on programming requesters, and more.

FF 58 Big View
Displays larger-than-screen IFF pictures using scrolling. Also included are utilities to play Simple MUSic (SMUS) files, a database program, and more.

FF 97 Juggler
Every Amiga user should have this HAM animation by Eric Graham. Also included are a function plotter, a text-reading program, and more.

FF 164 DiskSalv
An updated version of the most popular Amiga file-recovery program. Also included are Zoo, an alternative to Arc, NewZap, a disk-zap utility, and more.

Note that the entire Fred Fish collection is available from SystemEyes and the AmigaWorld Public Domain Library.

From Chiron Conceptions:

CC 311 Disk Utilities
SuperCat and SuperCat Sort help you keep track of all the stuff you've been accumulating on your disks. Also featured are hard-disk backup programs, a sector editor, and a real-time file compression utility.

CC 644 Graphic Magic Utilities
A "must" disk for the graphically inclined. Create slideshows using wipes, scrolls, and fades, capture screens to disk, show animation files and more with this excellent compilation of graphics utilities.

CC 711 Fun & Games
Star Trek 2.0 is a must for all you Trekkies out there. You also get to do battle with the Mafiosa Brothers in Duell 2.0.

CC 801 Telecommunications #1
Why buy commercial when you can choose from five full-featured telecommunications packages, all on one disk! These programs feature protocal transfer, multiple baud rates, autodial, and more.

CC 804 AMIC Telecommunications
A wonderful shareware telecommunications program that matches the features of the commercial ones. Included are useful utilities such as Unarc, Unzoo, Show, ShowANIM and more.

CC 903 Icon Library
This disk has over 100 icons of different types. Use these in place of your boring Workbench icons, or modify them even further to suit your needs.

CC 907 Great Fonts!
Here are over 40 fonts that you can use with your Amiga software. Sizes range from the tiny to headline, and the mix includes foreign-language and mathematical fonts.

CC 922 RIM-5
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```
CheckRec:
ChUp = lookup
ChDn = lookup

   Checkup:
      ChUp = ChUp -1
      IF ChUp = 0 THEN CheckDown
      IF search$ = lst$(ChUp,1) THEN Checkup
   CheckDown:
      ChDn = ChDn + 1
      IF ChDn > rec THEN ChDone
      IF search$ = lst$(ChDn,1) THEN CheckDown
   ChDone:
      FirstRec = ChUp + 1
      LastRec = ChDn - 1
      NumMatch = LastRec - FirstRec + 1
   GOSUB ShowForm
   RETURN

CheckForm:

FirstRec = 1
LastRec = rec
NumMatch = rec
GOSUB ShowForm
RETURN

       REM Display Records as Forms
ShowForm:
GOSUB ActivNone
   WINDOW 4,"Display",(100,30)-(600,180)
   count = 1

   FOR x = FirstRec TO LastRec
      CLS
      LOCATE 2,5
      PRINT "Record "; count; " of "; NumMatch
      PRINT
      PRINT lst$(x,1); " "; lst$(x,2)
      PRINT
      PRINT lst$(x,3)
      PRINT lst$(x,4);" ";lst$(x,5);" ";lst$(x,6)
      PRINT
      PRINT lst$(x,7)
      PRINT
      count = count + 1
      INPUT "<Return to Continue>"; ans$
    NEXT x

WINDOW CLOSE 4
GOSUB ActivAll
RETURN

       REM Display Records as a List
ShowList:
GOSUB ActivNone
    WINDOW 6,"List",(10,20)-(615,170)
    CLS
    PRINT
    PRINT
    count = 0

    FOR x = 1 TO rec
       FOR fld = 1 TO 7
          PRINT lst$(x,fld); " ";
       NEXT fld
       PRINT
       count = count + 1
       IF count = 10 THEN
          LOCATE 15,15
          INPUT "<Return to Continue>"; ans$
          CLS
          PRINT
          PRINT
          count = 0
       END IF

     NEXT x
     LOCATE 15,15
     INPUT "<Return to Continue>"; ans$
     WINDOW CLOSE 6
     GOSUB ActivAll
     RETURN
```

■



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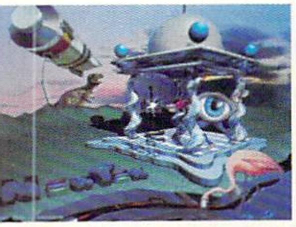
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left, top) The Texture Mapping and Transparency ontrol can be used for an nfinite number of effects.

left, bottom) This image y premiere Amiga artist Jim achs demonstrates the use f Transparency for montage ffect.

below, top) Salvador Dali-rained Louis Markoya com-ines various elements to reate impressive original omputer artwork.

below, bottom) The Text Rendering controls give you ncredible font power.





NEW FEATURES

Here is a partial list of Digi-Paint 3's new features:

- ***Super BitMaps with Auto-Scrolling*** — Real-time scrolling on up to 1024 pixels high or wide super bitmaps.
- ***Texture Mapping with Anti-Aliasing*** — Allows unlimited re-mapping of any brush to any shape with anti-aliasing.
- ***Colorize*** — Play Ted Turner and add color to black-and-white images or change colors on already colored images.
- ***100% Assembly Language*** — Makes Digi-Paint 3 the fastest HAM paint program ever!
- ***Advanced User Interface*** — Greatly simplifies painting by logically placing all the tools at your fingertips — Implemented by renowned Amiga artist Jim Sachs.
- ***Variable Dither*** — Computed internally at 30 bits per pixel (over one billion colors). Works with any brush re-mapping or warping operations and in all paint modes.
- ***Flexible Text Rendering*** — Allows for anti-aliased fonts, rainbow fonts and works with all brush warping/transparency controls and paint modes.
- ***User-Controllable Transparency*** — Allows real time control of the amount of transparency at the edge or hotspot of the brush and the location of the light source during re-paint.
- ***Transfer 24*** — Digi-Paint 3 comes with Transfer 24 image processing software to give you support of all Amiga resolution and display modes.
- ***Other New Features*** — Change resolution within program, Coordinates, Undo/Repeat, Overscan (normal and severe), brush rotation and tiling, new drawing and cutting tools, new paint modes, expanded palette, supports ARexx™ keyboard equivalents, X Specs™ 3D compatible and many more.

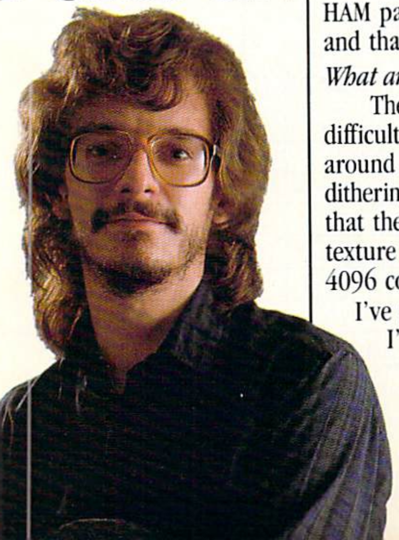
THE 4,096 PRIZE CONTEST

Win a Video Toaster! Yes, by merely upgrading to Digi-Paint 3 and sending in your completed contest entry form, you are entered into the Incredible 4,096 Prize Contest. The Grand Prize winner will be whisked off to NewTek to become the first outside person to visit the Alcatraz Research Laboratory, the #1 Amiga R&D facility whose location is unknown even to many NewTek employees. Besides spending a weekend seeing incredible technological marvels and enjoying the usual and unusual NewTek entertainments, the grand prize winner receives an Amiga 2500 system with the Video Toaster installed. Other winners receive Video Toasters, complete Digi-View Gold digitizing systems, NewTek jackets, or a lifetime supply of cinnamon cats.

1 GRAND PRIZE — 3 days/2 nights trip for one to NewTek and the Alcatraz Research Laboratory and a complete Amiga 2500 Video Toaster system and thousands of dollars of other prizes, including a lifetime* supply of cinnamon cats.
5 FIRST PRIZES — Video Toaster card for the Amiga 2000 and 150 cinnamon cats.
15 SECOND PRIZES — Complete Digi-View Gold system including camera and copy stand and 75 cinnamon cats.
30 THIRD PRIZES — A NewTek jacket and 25 cinnamon cats.

*For the purpose of this Sweepstakes, 1420 cinnamon cats has been determined to be a lifetime supply. Contest void where prohibited or restricted by law. No purchase is necessary to enter. Entries must be received by 1/19/90. For complete rules and instructions on how to enter, write to NewTek, Contest Rules; 115 West Crane Street; Topeka, KS 66603 and include a self-addressed, stamped envelope.

INTERVIEW WITH JAMIE PURDON



What were your design goals in programming Digi-Paint 3?

I wanted to really explore the power of HAM mode. With all those colors, it's possible to create very sophisticated effects. I wanted to give people the power of high-end graphics workstations. I'm really pleased with the work that Jim Sachs did with the interface, his implementation makes Digi-Paint 3 the easiest-to-use paint program I've ever seen. I coded Digi-Paint 3 entirely in assembly language, because speed is crucial to a paint program. The other HAM paint programs on the market are slow and bulky, and that really gets in the way of being creative.

What are you most proud of?

The real-time Auto-Scrolling is very useful, and was difficult to implement. The dithering routines are the best around because I use 30 bits per pixel accuracy to calculate dithering, which is over 1 billion colors internally. I'm sure that the feature people will like best is the anti-aliased texture mapping. This feature gives you the cleanest warped 4096 color image available on any Amiga paint program.

I've spent the last 2½ years working on Digi-Paint 3.

I'm very proud of the program and am sure it will be successful.



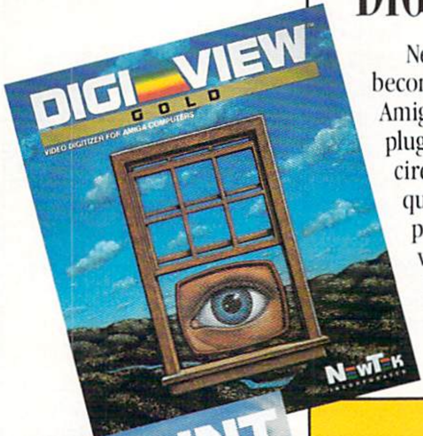
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If you own Digi-Paint, you can upgrade to the incredible power of Digi-Paint 3, enter the 4,096 Prize Contest and become a member of the Cool Friends of NewTek all at the same time! Just send us page 56 of your Digi-Paint manual along with a check, money order or VISA/MasterCard number for $29.95 plus $6 shipping and handling, and we'll send you a complete copy of Digi-Paint 3, including the box, expanded manual, software (including Transfer 24), contest entry form and CFONC application. Your friends will be suitably envious and respectful. Upgrade offer expires August 31, 1989.

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HAM PAINT PROGRAM COMPARISON

The following table shows how Digi-Paint 3 compares to the other HAM paint programs. Only advanced paint programs that utilize all 4096 colors of the HAM mode are compared here; paint programs like DeluxePaint II that use only 32 colors are not included in the comparison.

Feature	PhotoLab™	PhotonPaint™	Digi-Paint 3™
Basic paint features	yes	yes	yes
User Definable Warping	no	no	yes
Transparency w/any mode	no	no	yes
Super BitMaps	yes	no	yes
Auto-Scrolling	no	no	yes
Blur	no	no	yes
Range Paint	no	no	yes
Colorize	no	no	yes
Anti-aliased resize	yes	no	yes
Anti-aliased text	no	no	yes
Image processing	yes	no	yes
Works in 512K	no	yes	yes
Save to any resolution	yes	no	yes
100% assembly language	no	no	yes
Price	$149.95	$99.95	$99.95

DIGI-VIEW GOLD

NewTek's best-selling Digi-View video digitizer has become Digi-View Gold, completely redesigned for the Amiga 500 and 2000 lines of computers. The hardware plugs directly into the parallel port, and the new circuitry reduces the noise in the system for better quality images. And the Digi-View 3.0 software provides overscan and extra halfbrite support, as well as the line art mode for digitizing logos.

Digi-View Gold is the best video digitizer for the Amiga, and the perfect companion to Digi-Paint 3.

VIDEO TOASTER UPDATE

Work proceeds at a feverish pace to bring the Video Toaster to market. As of this writing, major new features have been added to the Video Toaster that will forever alter the way that professional and amateur video is produced. Look for the next exciting edition of the NewTek Times with full details of the Video Toaster!





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Digi-Droid	79.95	6.00	
Panasonic WV-1410	279.95	8.00	
CS-1L Copy Stand	74.95	10.00	
Digi-View 3.0 Upgrade	14.95	3.00	
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154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

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June card valid until August 31, 1989.

☐ Mr.
☐ Mrs.
☐ Ms. Name ______________________
Title ______________________
Address ______________________
City/State/Zip ______________________
Telephone ______________________

A. Do you own an Amiga?
☐ 1. Yes ☐ 2. No

B. If no, will you purchase one of the following?
☐ 3. Amiga 500
☐ 4. Amiga 2000
☐ 5. Amiga 2500
☐ 6. Other (please specify) ______
☐ 7. I currently have no purchasing plans.

C. Would you purchase an Amiga magazine which had a bound-in disk of demo programs, tutorials, etc.?
☐ 8. Yes ☐ 9. No

D. Which software packages will you purchase in the next 12 months? (Please choose all that apply.)
☐ 10. Entertainment
☐ 11. Word Processing
☐ 12. Communications
☐ 13. Spreadsheets
☐ 14. Home Productivity
☐ 15. Programming
☐ 16. Video
☐ 17. Database Management
☐ 18. Financial Management
☐ 19. Graphics
☐ 20. Education
☐ 21. Music
☐ 22. Animation
☐ 23. Sound/Speech
☐ 24. CAD/CAM
☐ 25. Other

E. Which peripherals will you purchase in the next 12 months? (Please choose all that apply.)
☐ 26. Monitor
☐ 27. Dot Matrix Printer
☐ 28. Modem
☐ 29. Memory Expansion
☐ 30. 3½" Floppy Drive
☐ 31. Hard Disk Drive
☐ 32. Gen Lock or Frame Grabber
☐ 33. Music Hardware
☐ 34. Color Printer
☐ 35. Laser Printer

F. If you are not a subscriber, please circle 499 on this card.

G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is $29.97. Canada and Mexico $38.97, Foreign Surface, $49.97, Foreign Airmail $84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10–12 weeks for delivery.

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151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
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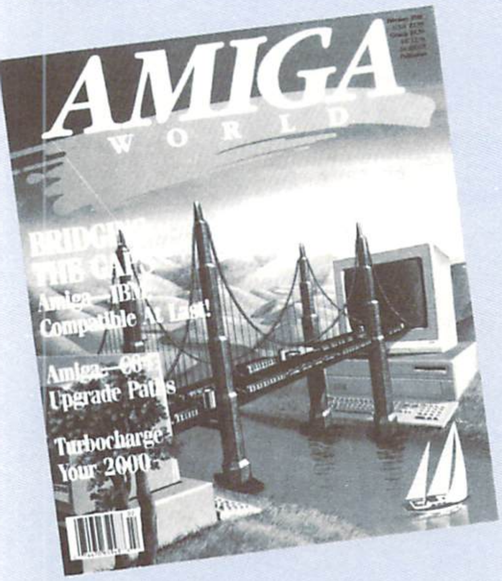
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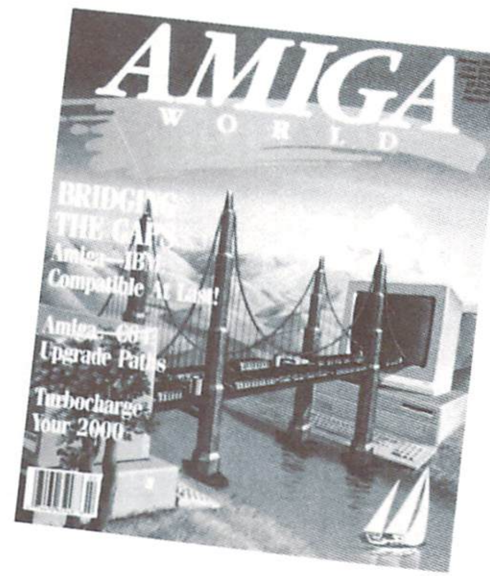
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DIGI-PAINT 3 TAKES OFF!

NewTek has launched the latest in Amiga graphics technology, and computer artwork will never be the same. This article looks at some of the most important new features of Digi-Paint 3.

Wait a minute — what happened to Digi-Paint 2? "Well, this new version is about three orders of magnitude better than Digi-Paint," explained Tim Jenison, president of NewTek. "And it's the result of over three man-years of software development. So the name 'Digi-Paint 3' really fits."

The user interface is the key to making the program's power available so Digi-Paint 3's interface received months of design work, and was implemented by Jim Sachs (renowned as the premier Amiga artist). The result makes using the program simple for both beginning and advanced artists. When you're using super bit maps that can be up to 1024 pixels high or wide, navigating on the bitmap is no problem. Just move the pointer to the edge of the screen, and Digi-Paint 3's real-time Auto-Scrolling allows you to easily move to another part of the bitmap or perform global screen operations.

Digi-Paint 3 works in the Amiga's unique Hold-And-Modify (HAM) mode, making all 4,096 colors of the Amiga palette available at once.

The Transfer 24 software included with Digi-Paint 3 turns your Amiga into the ultimate image manipulation workstation. Convert your HAM pictures to any Amiga resolution and display mode (including halfbrite and hi-res) with the same advanced pixel synthesis and averaging algorithms used with NewTek's best-selling Digi-View Gold video digitizer. Transfer 24 also gives you complete control of the RGB levels, contrast, brightness, saturation and sharpness of your images, as well as the ability to remap them to any palette.

The 11 different drawing modes in Digi-Paint 3 give you different ways of applying paint to the screen. The Range Painting mode lets you blend colors and create smooth gradient-filled backgrounds. Using Colorize mode, a black and white picture turns into lifelike color.

Resizing a custom brush looks terrific with Digi-Paint 3's sophisticated Smoothing power. Smoothing, also known as anti-aliasing, is the process of adding intermediate colors to reduce the "jaggies" that normally result when you resize.

Digi-Paint 3 adds another dimension to painting with powerful and flexible anti-aliased Texture Mapping: multiple levels of warping and control of the location and type of warping (horizontal, vertical or point) are provided; fully variable transparency produces matchless subtlety and realism; varying the amount of warping or transparency as the brush is re-drawn is possible.

The Transparency controls add translucency to any painting operation in any drawing mode (including Texture Mapping).

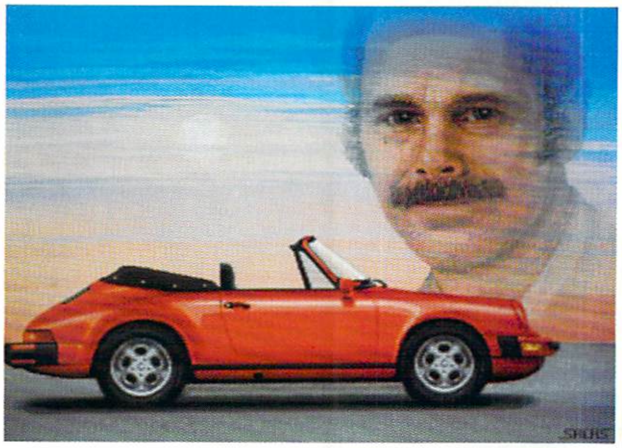
The advanced text handling of Digi-Paint 3 lets you render any Amiga font in any drawing mode. The Smoothing function in the Text Rendering controls uses anti-aliasing to make the text appear sharper and of greater resolution. This is perfect for video work.

Now that you've heard what we have to say, here are two of the most famous Amiga artists' thoughts on Digi-Paint 3:

- "Digi-Paint 3's unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs" — Jim Sachs
- "Digi-Paint 3 is not only a great stand-alone HAM paint program, but also the perfect companion for enhancing ray-traces and digitizations" — Louis Markoya

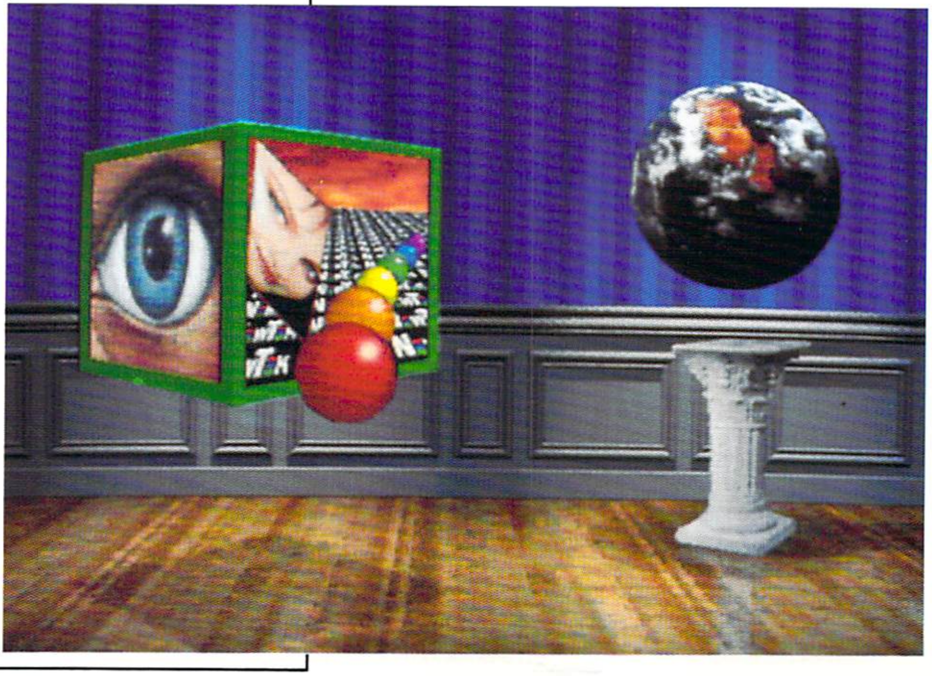
Turn to the last page of this newsletter to find out how to upgrade to Digi-Paint 3 and enter the 4096 Prize Contest.





"Digi-Paint 3's unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs" — Jim Sachs

(below) This image demonstrates the use of Texture Mapping (the cube and perspective floor), user controllable Transparency (the reflections on the floor and the wall) and the 4096 color Hold and Modify mode.



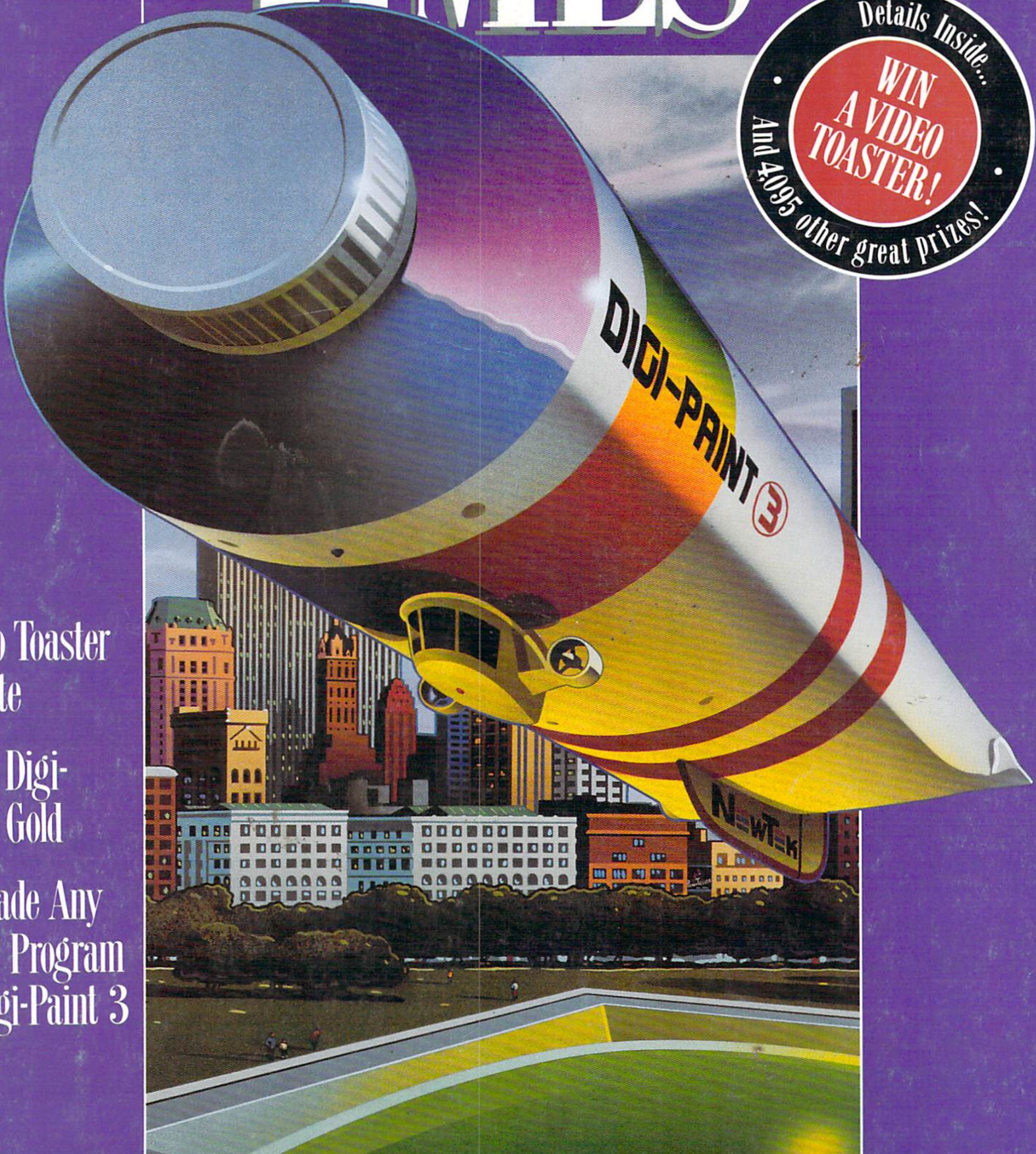
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- New! Digi-View Gold
- Upgrade Any Paint Program to Digi-Paint 3

THE LAUNCHING OF DIGI-PAINT 3